Instruction Manual

Modero G4

Configuration and Programming

Modero X-Series G4 Touch Panels

Modero S-Series G4 Touch Panels

Touch Panels

Last Revised: 9/02/2014

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Modero G4 Configuration and Programming

Overview

This document focuses on programming information for the Modero X and S Series G4 touch panels. For more information on designing touch panel pages intended to optimize the Modero G4 experience, please refer to the *TPDesign4 Operation Reference Guide* and the *User Interface Design Guide*, both available at **www.amx.com**.

The Modero G4 touch panels covered in this document are listed below:

Modero X-Series Touch Panels		
MXT-2000XL-PAN	**FG5968-01**	20.3" Modero X Series Panoramic Tabletop Touch Panel
MXD-2000XL-PAN	**FG5968-05**	20.3" Modero X Series Wall Mount Touch Panel - Portrait
	FG5968-11	20.3" Modero X Series Wall Mount Touch Panel - Landscape
MXT-1900L-PAN	**FG5968-02**	19.4" Modero X Series Panoramic Tabletop Touch Panel
MXD-1900L-PAN	**FG5968-06**	19.4" Modero X Series Wall Mount Touch Panel - Portrait
	FG5968-12	19.4" Modero X Series Wall Mount Touch Panel - Landscape
MXT-1000	**FG5968-03**	10.1" Modero X Series Tabletop Touch Panel
MXD-1000	**FG5968-07**	10.1" Modero X Series Wall Mount Touch Panel - Portrait
	FG5968-13	10.1" Modero X Series Wall Mount Touch Panel - Landscape
MXT-700	**FG5968-04**	7" Modero X Series Tabletop Touch Panel
MXD-700	**FG5968-08**	7" Modero X Series Wall Mount Touch Panel - Portrait
	FG5968-14	7" Modero X Series Wall Mount Touch Panel - Landscape
MXD-430	**FG5968-15**	4.3" Modero X Series Wall Mount Touch Panel
Modero X-Series "No Comm" (NC) Touch Panels (no Camera, no Microphone, no NFC, no Bluetooth)		
MXT-2000XL-PAN-NC	**FG5968-32**	20.3" Modero X Series Panoramic Tabletop Touch Panel
MXD-2000XL-PAN-NC	**FG5968-33**	20.3" Modero X Series Panoramic Wall Mount Touch Panel - Portrait
	FG5968-34	20.3" Modero X Series Panoramic Wall Mount Touch Panel - Landscape
MXT-1900L-PAN-NC	**FG5968-21**	19.4" Modero X Series Panoramic Tabletop Touch Panel
MXD-1900L-PAN-NC	**FG5968-22**	19.4" Modero X Series Panoramic Wall Mount Touch Panel - Portrait
	FG5968-23	19.4" Modero X Series Panoramic Wall Mount Touch Panel - Landscape
MXT-1000-NC	**FG5968-24**	10.1" Modero X Series Tabletop Touch Panel
MXD-1000-NC	**FG5968-25**	10.1" Modero X Series Wall Mount Touch Panel - Portrait
	FG5968-26	10.1" Modero X Series Wall Mount Touch Panel - Landscape
MXT-700-NC	**FG5968-27**	7" Modero X Series Tabletop Touch Panel
MXD-700-NC	**FG5968-28**	7" Modero X Series Wall Mount Touch Panel - Portrait
	FG5968-29	7" Modero X Series Wall Mount Touch Panel - Landscape
Modero S-Series Touch Panels		
MST-1001	**FG2265-05**	10.1" Modero S Series Tabletop Touch Panel
MSD-1001	**FG2265-01**	10.1" Modero S Series Wall Mount Touch Panel - Landscape
MST-701	**FG2265-06**	7" Modero S Series Tabletop Touch Panel
MSD-701	**FG2265-02**	7" Modero S Series Wall Mount Touch Panel - Landscape
MST-431	**FG2265-07**	4.3" Modero S Series Tabletop Touch Panel
MSD-431	**FG2265-03**	4.3" Modero S Series Wall Mount Touch Panel - Landscape

For information on Configuring and Programming X Series G5 touch panels, refer to the Modero G5 Configuration and Programming Guide (available at www.amx.com)

Settings Pages

Overview

Unlike previous AMX touch panels, Modero X/S Series G4 touch panels no longer have separate *Setup* and *Protected Setup* pages. All touch panel settings and functionality are now controlled through one *Settings* page. The *Connection & Networks* and *Configuration* sections are accessible with the correct password.

Accessing the Settings Page

To access the *Settings* page, press and hold the **Sleep** button on the touch panel for 3 seconds. For more information on the location of the **Sleep** button, please refer to the *Operation Reference Guide* for the panel model, available at **www.amx.com**.

FIG. 1 Location of the Sleep button on the MXT-1000

Alternately, some installation circumstances may require disabling *Settings* page access through the **Sleep** button. In this case, you may access *Settings* pages during a bootup of the panel.

As the panel boots up, watch for a series of indicator dots to appear on the splash screen (FIG. 2). To access the *Settings* page, press the bottom right corner of the touchscreen within the first three seconds of these dots appearing on the screen.

FIG. 2 Indicator dots on the Modero X/S Series G4 splash screen

NOTE

*For more information on disabling Settings page access through the **Sleep** button, please refer to the Admin Configuration* section on page 30.

Using the Settings Pages

When opened, the *Settings* pages appear in the center of the panel display. Please note that many of the pages may be longer than they initially appear. To reach additional functions on a given page, the page itself may be scrolled up and down to reveal those functions.

NOTE

The Settings *pages use the subpage feature. Not all menu items on a* Settings *page are visible on screen at one time, and scrolling up and down to see them may be necessary. In the case of long Settings pages, a scroll bar appears momentarily when a new subpage viewer appears, and allows you to gauge current position and length of the page.*

Many of the entries on *Settings* pages are read-only, or may be modified if information on the same or another *Settings* page is changed. The current information on a page appears in blue under the main category title; press the arrow to the right in order to open the category's *Settings* page (FIG. 3).

If the arrow is grey, then the *Settings* page associated with that category is currently disabled (FIG. 4). This may be altered with changes in connectivity (connecting a USB stick to the touch panel, for instance) or changes to other *Settings* pages.

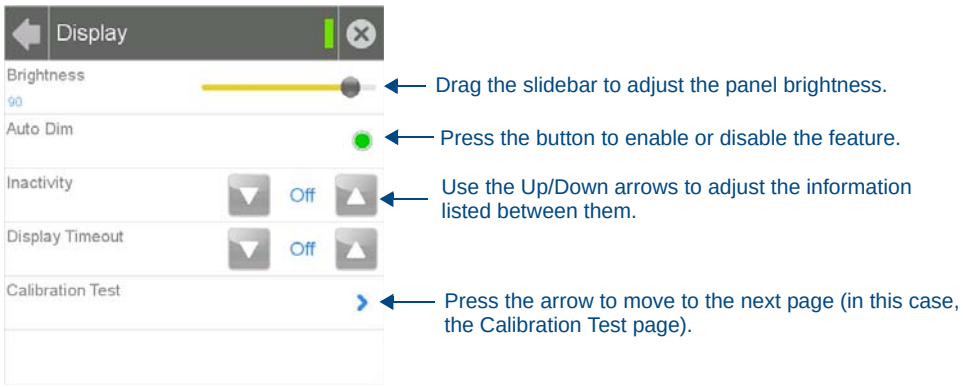

Display
Brightness
90
Auto Dim
Inactivity
Off
Display Timeout
Off
Calibration Test
Drag the slidebar to adjust the panel brightness.
Press the button to enable or disable the feature.
Use the Up/Down arrows to adjust the information listed between them.
Press the arrow to move to the next page (in this case, the Calibration Test page).

FIG. 3 Settings page with multiple modifiable sections

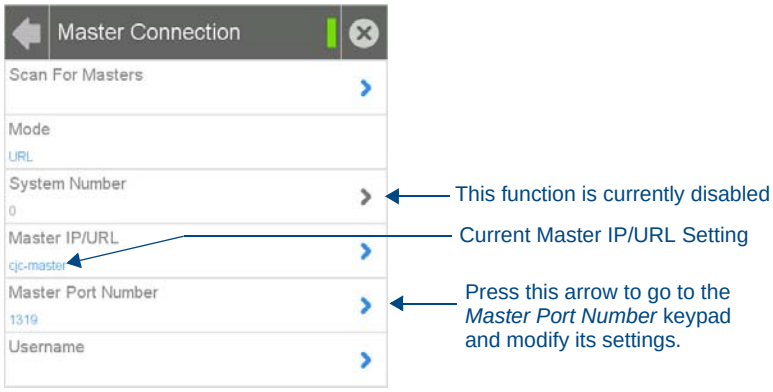


FIG. 4 Settings page with enabled and disabled arrows

Navigation Controls and Connection Status

Use the navigation controls in the title bar of each Settings page to go back to the previous page, view the current connection status, and close the current Settings page (FIG. 5):

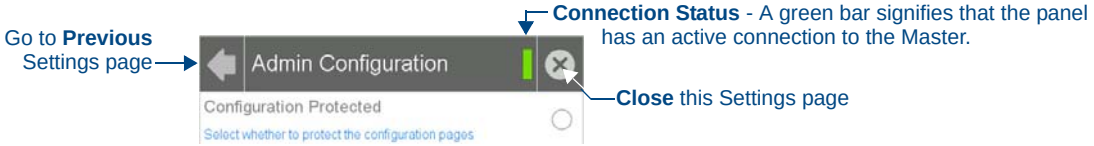

Go to Previous Settings page
Admin Configuration
Configuration Protected
Select whether to protect the configuration pages
Connection Status - A green bar signifies that the panel has an active connection to the Master.
Close this Settings page

FIG. 5 Settings pages - Title bar Navigation Controls and Connection Status

Saving Changed Settings

Changes to the *Settings* pages are made to the device's Flash memory, and may not be saved immediately to the panel in the case of sudden power loss. To ensure that your changes are retained, always make sure to shut down the device from the main *Settings* page (page 5). In situations of sudden power loss, the panel may boot up at its next use with only previously saved settings, requiring resetting all of those settings to their new values.

WARNING

Modero X and S Series touch panels should always be shut down or rebooted by the Settings pages. Turning off a touch panel by removing power may cause damage to the touch panel's flash memory.

Settings

The *Settings* page (FIG. 6) controls access to all other Settings pages.

FIG. 6 Settings page

Settings Page	
Status:	Select this to go to the *Status* page (page 6).
Display:	Select this to go to the *Display* page (page 8)
Sounds:	Select this to go to the *Sounds* page (page 10).
Date & Time:	Select this to go to the *Date & Time* page (page 12).
Connection & Networks	Select this to go to the *Connection & Networks* page (page 13). If the lock icon is closed, you will need the correct password to access this section.
Configuration:	Select this to go to the *Configuration* page (page 24). If the lock icon is closed, you will need the correct password to access this section.

The *Connection & Networks* and *Configuration* pages are password-protected. To open either of these pages:

1. Select the appropriate page from the *Settings* page.
2. In the *Password* keypad, enter the password and select **OK**. The default password is **1988**.

Status

The *Status* page (FIG. 7) displays basic touch panel information, such as currently available memory and the screen resolution dimensions.

FIG. 7 Status page

Status Page	
Device Number:	Displays the panel's device number.
Connection:	Displays the panel's connection type.
Panel IP:	Displays the panel's IP address.
Master IP:	Displays the IP address for the panel's Master.
Version:	Displays the current version of the panel firmware.
Panel Type:	Displays the panel model.
Serial:	Displays the specific serial number value assigned to the panel.
Memory:	Displays the amount of memory available on the panel.
File System:	Displays the amount of MicroSD card memory available on the panel.
Resolution:	Displays the screen height and width in pixels.
Start Time:	Displays the time when the panel was last started or restarted.
Lamp Hours:	Displays the number of hours elapsed with the display on full power.
File Information:	Select this to go to the *File Information* page (page 7).

File Information

The *File Information* page (FIG. 8) displays information on the TPDesign4 project file currently loaded on the panel.

FIG. 8 File Information page

File Information Page	
Configuration:	This section contains information on the panel's configuration.
Power Up Page:	Displays the page assigned to display after the panel is powered-up.
Inactivity Page:	Displays the page assigned to display when the panel is in Sleep Mode.
High Port:	Displays the high port (port count) value for the panel.
High Access:	Displays the high access (access count) value for the panel.
High Channel:	Displays the high channel (channel count) value for the panel.
High Level:	Displays the high level (level count) value being used by the panel.
Startup String:	Displays the start-up string.
Wake Up String:	Displays the wake up string used after an activation from a timeout.
Sleep String:	Displays the sleep string used during a panel's Sleep mode.
Shutdown String:	Displays the shutdown string used during a panel's Shutdown mode.
File:	This section contains information on the particular TPDesign4 file used by the panel.
Filename:	Displays the name of the TPDesign4 file currently being used for the panel.
Job Name:	Displays the job name.
Created:	The creation date of the project.
Revised:	Displays the last revision date for the project.
Saved:	Displays the last save date on the project.
Dealer ID:	Displays the dealer ID number (*unique to every dealer and entered in TPD4*).
Designer ID:	Displays the designer information.
Sales Order:	Displays the sales order information.
Purchase Order:	Displays the purchase order information.
File Revision:	Displays the revision number of the TPDesign4 file, if applicable.
Blink Rate:	Displays the feedback blink rate, in 5-second increments.
Build Number:	Displays the build number information of the TPD4 software used to create the project file.
Job Comments:	Displays any comments associated to the job (from the TPD4 project file).

Display

The *Display* page (FIG. 9) controls the basic functions of the touch panel display, including the panel brightness.

FIG. 9 Display page

Display Page	
Brightness:	Sets the display brightness and contrast levels of the panel. • Move the slidebar to the left or right to adjust the brightness level.
Auto Dim:	Press this button to enable automatic dimming of the panel display if the *Display Timeout* setting is enabled.
Inactivity:	Indicates the length of time that the panel can remain idle before automatically flipping to a pre-selected page. • Press the Up/Down buttons to increase/decrease the Inactivity Page Flip Timeout setting. Range = 1, 2, 5, 10, 15, 30 minutes, 1, 2, 3, 4 hours. • Set the timeout value to Off to disable Inactivity Page mode. ***Note**: The touch panel page used for the Inactivity page flip is named within a small Inactivity Page field below the buttons. The default reading is "MAIN".*
Display Timeout:	Indicates the length of time that the panel can remain idle before the display automatically powers down. • Press the Up/Down buttons to increase/decrease the Display Timeout setting. Range = 1, 2, 5, 10, 15, 30 minutes, 1, 2, 3, 4 hours. • Set the timeout value to Off to disable Display Timeout mode.
Calibration:	Select this to open the *Calibration* page (page 9).

Calibration

In certain circumstances, it may be necessary to calibrate the touch panel's touch screen, in order to guarantee accurate button selection. The *Calibration* page (FIG. 13) offers two options: the opportunity to calibrate the touch panel, and the opportunity to ensure that a previous calibration is still accurate.

FIG. 10 Calibration page

To calibrate the touch panel:

1. From the *Settings* page, select *Display.*
2. From the *Display* page, select *Calibration*.
3. To calibrate the touch panel, select *Calibrate* to open the *Calibration* page (FIG. 11).

FIG. 11 Panel calibration

4. Follow the instructions, touching the crosshairs in order across the screen.
5. The page will read "*Calibration Successful. Touch to continue*." Touch anywhere on the screen to return to the *Calibration* page.

NOTE

If the screen is not touched at that point, the device will automatically return to the Calibration *page within 10 seconds.*

In certain circumstances, you may wish to test the calibration of a panel without actually recalibrating it. The *Calibration Test* page (FIG. 12) may be used to verify the accuracy of that calibration.

To calibrate the touch panel:

1. From the *Settings* page, select *Display.*
2. From the *Display* page, select *Calibration.*
3. To test the calibration of the touch panel, select *Calibration Test* to open the *Calibration Test* page (FIG. 12).

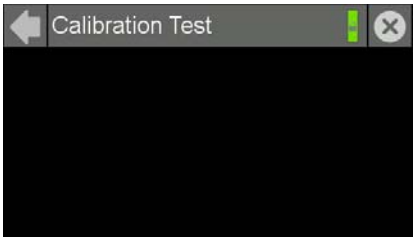


FIG. 12 Calibration Test page

4. Touch the screen and note the positioning of the crosshairs based on where you touch.
5. If the crosshairs do not match the places where you touch, then go back to calibrate the panel.

Calibration Test

Unlike previous AMX touch panels, the Modero X and S Series panels are self-calibrated on startup. The *Calibration Test* page (FIG. 13) may be used to verify the accuracy of that calibration.

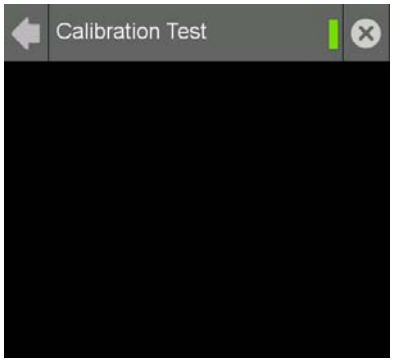


FIG. 13 Calibration Test page

To run a calibration test on the panel:

1. From the *Settings* page, select *Display.*

2. From the *Display* page, select *Calibration Test*.
3. Follow the instructions, touching the crosshairs in order across the screen.

NOTE

In order to ensure a correct calibration upon starting, the touch panel display should not be touched while the panel is booting.

Sounds

The *Sounds* page (FIG. 14) allows adjustment of volume levels and panel sounds settings.

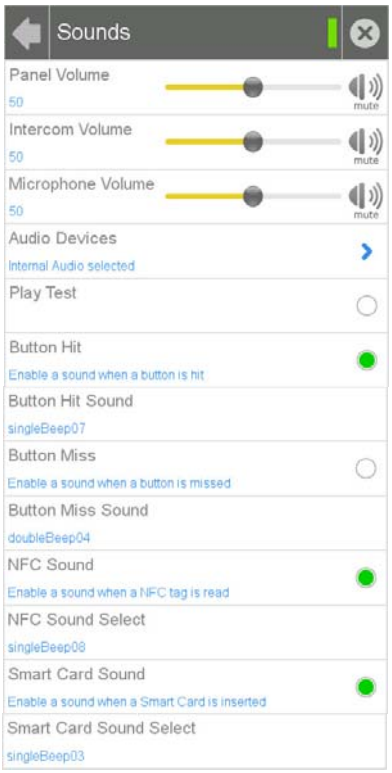


FIG. 14 Sounds page

Sounds Page	
Panel Volume:	• Move the slidebar to the left or right to adjust the panel volume. • Press the **Mute** icon to mute the panel.
Intercom Volume:	• Move the slidebar to the left or right to adjust the intercom volume. • Press the **Mute** icon to mute the intercom. ***Note**: This option does not apply to Modero X/S Series G4 panels without a microphone (including all "No Comm" panels).*
Microphone Volume:	• Move the slidebar to the left or right to adjust the microphone input volume. • Press the **Mute** icon to mute the microphone input. ***Note**: This option does not apply to Modero X/S Series G4 panels without a microphone (including all "No Comm" panels).*
Audio Devices:	Click this to open the *Audio Devices* page (page 11).
Play Test:	Press this button to test the audio output by playing a preselected sound.
Button Hit:	Press this button to enable the panel to play a default sound whenever a button on a page is selected.
Button Hit Sound:	Displays the information on the sound file associated with the Button Hit function. Press repeatedly to scroll through the 10 included sounds.

Sounds Page (Cont.)	
Button Miss:	Press to enable the panel to play a default sound when you touch a non-active button or any area outside of the active button.
Button Miss Sound:	Displays the information on the sound file associated with the Button Miss function. Press repeatedly to scroll through the 10 included sounds.
NFC Sound:	Press to enable the panel to play a default sound when the panel detects an NFC tag. For more information on NFC functionality, please refer to the *NFC* section on page 21. ***Note**: This option does not apply to Modero X/S Series G4 panels without a microphone or NFC functionality (including all "No Comm" panels).*
NFC Sound Select:	Displays the information on the sound file associated with the NFC Sound function. Press repeatedly to scroll through the 10 included sounds. ***Note**: This option does not apply to Modero X/S Series G4 panels without a microphone or NFC functionality (including all "No Comm" panels).*
Smart Card Sound:	Press to enable the panel to play a default sound when the panel detects a CAC card. (For more information on CAC card functionality, please refer to the *Smart Card* section on page 22.)
Smart Card Sound Select:	Displays the information on the sound file associated with the Smart Card Sound function. Press repeatedly to scroll through the 10 included sounds.

Creating a Custom Sound Set

Instead of using the 10 sounds included as default selections on each setting, the Button Hit Sound, Button Miss Sound, NFC Sound and Smart Card Sound may also have a 'custom' sound set by the user.

To do this, create a resource in TPDesign4 for each custom sound, named "customSingle.wav," "customDouble.wav," "customNfc.wav," and "customSmartCard.wav," respectively.

Audio Devices

The *Audio Devices* page (FIG. 15) allows control of audio input and output both from the touch panel's internal microphone (in a Modero X/S Series G4 touch panel with microphone functionality) and speaker, or from external USB or Bluetooth devices.

FIG. 15 Audio Devices page

Audio Devices Page	
Internal Audio:	Click this button to allow audio input from the touch panel's microphone, if available. ***Note**: This option does not apply to Modero X/S Series G4 panels without a microphone (including all "No Comm" panels).*
USB Audio:	Click this button to allow audio input and output from and to devices connected to the touch panel. If no devices are connected via USB, this button will be disabled.
Bluetooth Audio:	Click this button to allow audio input and output from and to devices connected to the touch panel via Bluetooth. If no devices are connected via Bluetooth, this button will be disabled. For more information on Bluetooth connectivity, please refer to the *Bluetooth* section on page 18. ***Note**: This option does not apply to Modero X/S Series G4 panels without a microphone or Bluetooth functionality (including all "No Comm" panels).*

Exporting Microphone Input From a Modero X/S Series G4 Touch Panel

For more information on how to export input from a microphone-enabled Modero X/S Series G4 panel, refer to the *Routing the Touch Panel's Camera and Audio Input to a PC* section on page 43.

Date & Time

The *Date & Time* page (FIG. 16) allows setting and adjusting of time and date information on the touch panel. If the time and/or date on the Master is modified, all connected devices will be updated to reflect the new information.

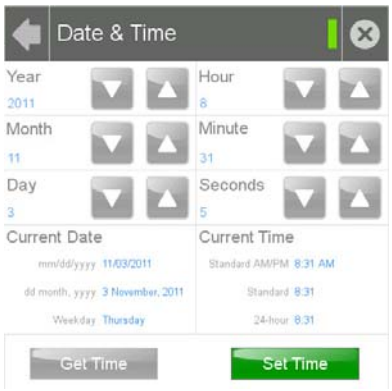


FIG. 16 Date & Time page

Date & Time Page	
Year:	Use the **Up/Down** arrows to set the current year.
Month:	Use the **Up/Down** arrows to set the current month.
Day:	Use the **Up/Down** arrows to set the current day.
Hour:	Use the **Up/Down** arrows to set the current hour.
Minute:	Use the **Up/Down** arrows to set the current minute.
Seconds:	Use the **Up/Down** arrows to set the current second.
Current Date:	Displays the currently set date on the touch panel.
Current Time:	Displays the currently set time on the touch panel.
Get Time:	The **Get Time** button retrieves time/date information from the Master.
Set Time:	The **Set Time** button retains and saves any time/date modifications made on the panel.

The current date and time may be retrieved from the NetLinx Master, or it may be updated manually. To retrieve the date and time from the Master:

1. From the *Date & Time* page, press the **Get Time** button.
2. The new time and date will be added.
3. Press the **Back** button to save the changes.

Connection & Networks

The *Connections & Networks* page (FIG. 17) is the center for several networking functions, including connecting the touch panel to a Master, connecting it to a network, allowing Bluetooth functionality, and controlling NFC functionality.

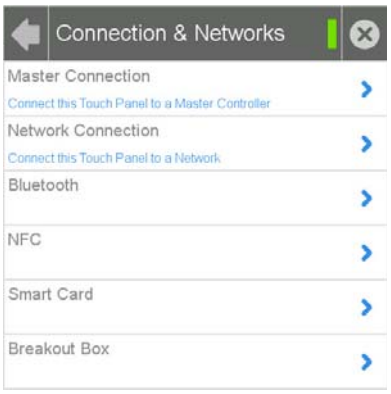


FIG. 17 Connection & Networks page

Connection & Networks Page	
Master Connection:	Opens the *Master Connection* page (page 13).
Network Connection:	Opens the *Network Connection* page (page 16)
Bluetooth:	Opens the *Bluetooth* page (page 18).
NFC:	Opens the *NFC* page (page 21).
Smart Card:	Opens the *Smart Card* page (page 22).
Breakout Box:	Opens the *Breakout Box* page (page 23).

NOTE

The Bluetooth and NFC options do not apply to Modero X/S Series G4 panels without Bluetooth or NFC functionality (including all "No Comm" panels).

Master Connection

The *Master Connection* page (FIG. 18) controls the method of connection to a NetLinx Master.

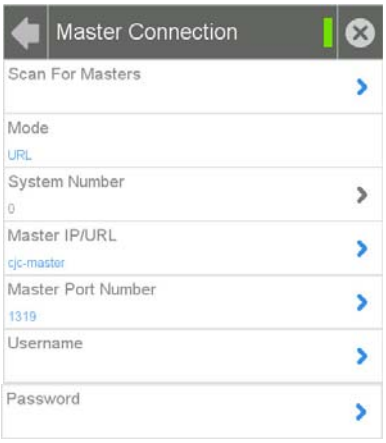


FIG. 18 Master Connection page

Master Connection Page	
Scan For Masters	Click this button to open the *Master Scan* page (page 14).
Mode:	Cycles between the connection modes: *URL*, *Listen*, and *Auto*. • **URL** - In this mode, enter the IP/URL, Master Port Number, and username/password (if used) on the Master. The System Number field is read-only - the panel obtains this information from the Master. • **Listen** - In this mode, add the panel address into the URL List in NetLinx Studio and set the connection mode to Listen. This mode allows the Modero touch panel to "listen" for the Master's communication signals. The System Number and Master IP/URL fields are read-only. • **Auto** - In this mode, enter the System Number and a username/password (if applicable). Use this mode when both the panel and the NetLinx Master are on the same Subnet. The Master IP/URL field is read-only.
System Number:	Allows entry of a system number. Default value is 0 (zero). ***Note:*** *Available in Auto Mode Only - disabled when URL or Listen is selected.*
Master IP/URL:	Sets the Master IP or URL of the NetLinx Master. ***Note:*** *Available in URL Only - disabled when Listen or Auto is selected*.
Master Port Number:	Allows entry of the port number used with the NetLinx Master. Default = 1319.
Username:	If the target Master has been previously secured, enter the alpha-numeric string (into each field) assigned to a preconfigured user profile on the Master. This profile should have the predefined level of access/configuration rights.
Password:	If the target Master has been previously secured, enter the alpha-numeric string (into each field) assigned to a preconfigured user profile on the Master. This profile should have the predefined level of access/configuration rights.

Scanning for Masters

Use the *Scanning for Masters* page to quickly and easily identify all of the available Masters on the network. The site survey on this page passively listens to network traffic and presents all the compatible Masters for easy selection. Selecting the desired Master automatically updates the Master connection and makes an automatic connection.

FIG. 19 Master Scan page

To scan for available Masters:

1. From the *Master Connection* page, press the **Scanning For Masters** button.
2. In the *Master Scan* page, select the Master for the touch panel. The Master Connection page will automatically display the information on the selected Master.

Changing the Master Connection Mode

To change the Master Connection mode between *URL*, *Listen*, and *Auto*:

1. From the *Master Connection* page, press the *Mode* field to change the mode.
2. Keep pressing to bring up the desired mode.
3. When finished, press **Back** to return to the *Settings* page.

Changing the Master IP/URL

To change the IP address or URL for the chosen Master:

1. From the *Master Connection* page, press the *Master IP/URL* field to open the *Master IP Address* keyboard (FIG. 20).

FIG. 20 Master IP Address keyboard

2. Enter the IP address or the URL in the keyboard field and press **OK**.
3. The new IP address/URL is now displayed in the *Master IP/URL* field.
4. When finished, press **Back** to return to the *Settings* page.

Changing the Master Port Number

To change the Master Port Number from its default:

1. From the *Master Connection* page, press the *Master Port Number* field to open the *Master Port Number* keypad (FIG. 21).

FIG. 21 Master Port Number keypad

2. Enter the new Master Port Number and press **OK**.
3. The new Master Port Number is now displayed in the *Master Port Number* field.

Changing the Master Username and Password

To change the current username used by the touch panel to access the Master:

1. From the *Master Connection* page, press the *Username* field to open the *Master User* keyboard (FIG. 22).

FIG. 22 Master User keyboard

2. Enter the new username in the keyboard field and press **OK**.
3. When finished, press **Back** to return to the *Settings* page.

To change the password:

1. From the *Master Connection* page, press the *Password* field to open the *Master Password* keyboard (FIG. 23).

FIG. 23 Master Password keyboard

2. Enter the new password in the keyboard field and press **OK**.
3. When finished, press **Back** to return to the *Settings* page.

Network Connection

The *Network Connection* page (FIG. 24) controls the configuration of settings for Ethernet communication with the touch panel.

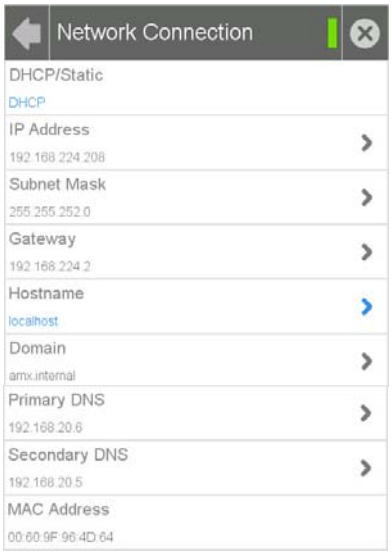


FIG. 24 Network Connection page

Network Connection Page	
DHCP/Static:	Sets the panel to either DHCP or Static communication modes. • *DHCP* is an IP Address assigned to the panel by a DHCP server. If DHCP is selected, the other *Network Connection* fields are disabled (see below). • *Static IP* is a permanent IP Address assigned to the panel. If Static IP is selected, the other *Network Connection* fields are enabled.
IP Address:	Displays the IP address for this panel. If DHCP is enabled, this field will be disabled.
Subnet Mask:	Displays the subnetwork for this panel. If DHCP is enabled, this field will be disabled.
Gateway:	Displays the gateway address for this panel. If DHCP is enabled, this field will be disabled.
Hostname:	Displays the hostname for this panel.
Domain:	Displays a name to the panel for DNS look-up. If DHCP is enabled, this field will be disabled.
Primary DNS:	Displays the address of the primary DNS server used by this panel for host name lookups. If DHCP is enabled, this field will be disabled.
Secondary DNS:	Displays the secondary DNS address for this panel. If DHCP is enabled, this field will be disabled.
MAC Address:	This unique address identifies the Ethernet connection in the panel (read-only).

Setting Static IP Information

When using *DHCP* settings for a panel, the DHCP server will automatically populate almost all of the *Network Connections* page fields, with the exception of *Hostname*. When setting the panel for *Static*, however, this information must be entered manually. To enter the network connection information:

1. In *DHCP/Static*, press the field until the entry reads "Static". This enables all of the editable *Network Connections* page fields.
2. Select the *IP Address* field to open the *Wired IP Address* keypad (FIG. 25).

FIG. 25 Wired IP Address keypad

3. Enter the server's IP address and click **OK**.
4. Repeat this procedure with the other fields on the *Network Connections* page.
5. When finished, the new connection information will be visible in the *Network Connections* page.

Entering a New Hostname

In order to facilitate DNS lookup of the panel, you should choose a new hostname for the panel.

NOTE

If the "Synchronize Device Names" option in the Panel Configuration page (page 29) is enabled, the hostname is disabled in the Network Connection page and automatically set to the Device Name.

To add a new hostname, or to change an existing one:

1. From the *Connection & Networks* page, select *Network Connection* to open the *Network Connection* page.
2. From the *Network Connection* page, select *Hostname* to open the *Host Name* keyboard (FIG. 26).

FIG. 26 Host Name keyboard

3. Enter the new hostname and press **OK**.
4. The new hostname will now appear in the *Hostname* field.

Bluetooth

The *Bluetooth* page (FIG. 27) controls whether a touch panel allows access to previously selected Bluetooth devices, as well as allowing new devices' access.

FIG. 27 Bluetooth page

Bluetooth Page	
Bluetooth:	Click this button to enable or disable Bluetooth device access to the touch panel.
Set up new device...:	Select to open the *Bluetooth Device Search* page (FIG. 28).
Device Name:	Displays the name of the Bluetooth paired device.
Device Address:	Displays the device of the Bluetooth paired device.
Connected:	Displays if the device is currently connected to the touch panel.
Disconnect:	After choosing a Bluetooth paired device, select this button to disconnect the paired device but keep it in the list.
Remove:	After choosing a Bluetooth paired device, select this button to remove the device from the list.
Up/Down:	Use the Up/Down arrows to select the Bluetooth device currently connected to the touch panel.

NOTE

The Bluetooth options do not apply to Modero X/S Series G4 panels without Bluetooth functionality (including all "No Comm" panels).

Bluetooth Device Search

The *Bluetooth Device Search* page (FIG. 28) allows you to search for new Bluetooth devices, or ones already paired to the panel, and allow them to connect to the panel.

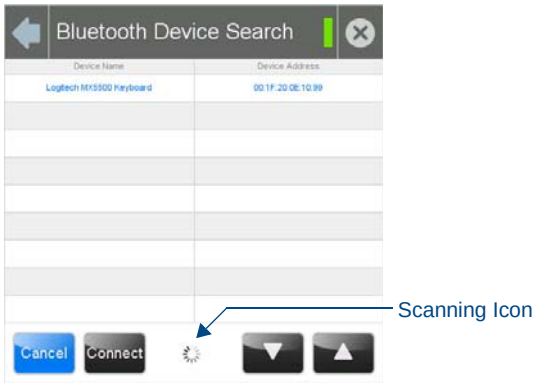


FIG. 28 Bluetooth Device Search page

Bluetooth Device Search Page	
Device Name:	This is the device name of the Bluetooth device currently on the network.
Device Address:	This is the device address of the Bluetooth device currently on the network.
Cancel:	Press this button to cancel adding new devices to the page.
Connect:	Press this button to connect a newly detected device to the network.
Up/Down:	Press the **Up** and **Down** buttons to select a particular Bluetooth device before connecting it.

Searching for New Bluetooth Devices

Modero X/S Series G4 touch panels can detect active Bluetooth devices connected to their network through a MXA-BT Bluetooth USB Adaptor (**FG5968-19**). Once paired with the panel, a Bluetooth device may go out of range of the MXA-BT and lose a connection, but automatically reconnect once it returns within range.

NOTE

The Bluetooth device must be put into Pairing Mode before enabling the panel to search for Bluetooth connections.

To search for new Bluetooth devices in the vicinity:

1. Install the MXA-BT Bluetooth USB Adaptor in a USB port on the touch panel. With wall-installed touch panels, this may require temporarily removing the panel from its back box in order to reach a USB port.
2. From the *Bluetooth* page, select *Set Up New Device...* to open the *Bluetooth Device Search* page.
3. The panel automatically starts searching for unpaired and paired Bluetooth devices within its range. When it finds devices within its range, these will be displayed in the *Device Name* and *Device Address* fields. The panel will continue to search for Bluetooth devices within its range for 30 seconds.
4. When the panel is finished scanning for Bluetooth devices, those devices still need to be paired with the touch panel if they have not done so before. In the search list, select the device to be paired and click **Connect** (FIG. 29).

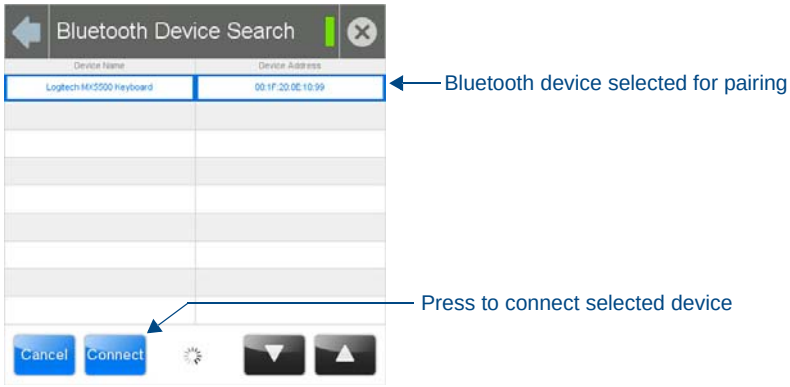


FIG. 29 Selecting a Bluetooth device

5. In the *Enter Pincode* keypad (FIG. 30), enter the device's pincode.

FIG. 30 Enter Pincode keypad

- The default pincode is **0000**.
- You must enter the pincode within 30 seconds.

6. If a pincode needs to be entered from the device, a *System Message* popup window appears, requesting that this be done (FIG. 31).

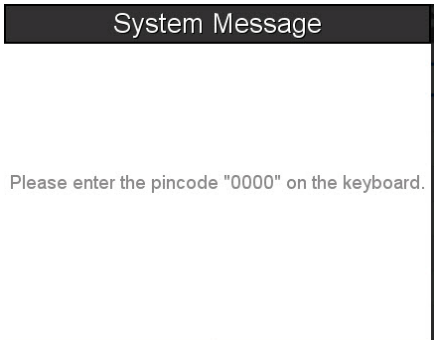


FIG. 31 System Message: Please enter the pincode

7. Once the pincode has been entered, a new System Message popup window appears, noting that pairing is in progress (FIG. 32).

FIG. 32 System Message: Pairing in progress...

8. When the pairing is finished, the new device appears on the main *Bluetooth* page (FIG. 33).

FIG. 33 Detected Bluetooth devices on the Bluetooth page

NFC

The *NFC* page (FIG. 34) controls the touch panel's Near Field Communications™ (NFC) access, as well as displaying the last NFC tag read by the device. For more information on the NFC capabilities of your panel, please refer to the Operation Reference Guide to the panel in question. These Operation Reference Guides are available at www.amx.com.

FIG. 34 NFC page

NFC Page	
NFC:	Click this button to enable or disable NFC functionality.
Last Tag Read:	Displays the last-read NFC tag ID.

NOTE

For NFC programming information, refer to the NFC Commands section on page 118.

NOTE

The NFC options do not apply to Modero X/S Series G4 panels without NFC functionality (including all "No Comm" panels).

Smart Card

The *Smart Card* page controls the touch panel's ability to receive and process information from Common Access Card (CAC) smart card readers.(FIG. 35)

FIG. 35 Smart Card page

Use of this feature requires the use of an AMX-approved CAC reader, as shown below.

Smart Card Page	
Smart Card:	Click this button to enable or disable the touch panel's ability to use smart card readers
Reader Name:	Click this button to enable or disable displaying the smart card reader's name and model.
CHUID:	Click this button to enable or disable displaying the card's Card Holder Unique Identifier (CHUID) number.

Three CAC readers are approved for use with the Modero touch panels. Each has different methods of displaying the detection of valid smart cards, but all connect to the touch panel via the touch panel's USB port.

These three models are:

- SCM Microsystems SCR3310 USB Card Reader
- SCM SCR331 USB Common Access CAC Smart Card Reader
- SCM SCR3500 Smart Card Reader

Enabling a Touch Panel To Use a CAC Reader

1. From the *Smart Card* page, press the *Smart Card* button. This enables the panel to receive CAC card information.
2. Following the manufacturer's instructions, connect the CAC reader to the touch panel via the panel's USB port.
3. If desired, the touch panel may emit a sound to inform the user that a valid smart card has been detected by the reader. From the *Sounds* page (page 10), enable the panel to emit sounds when detecting a smart card, and choose one of the ten preloaded sounds.

NOTE

For more information on smart card programming, please refer to the Smart Cards section on page 121.

When using a CAC reader, please note that different readers have different display standards. For instance, with devices that have an LED, some light up to show that the device is connected to the touch panel, while others will only light up upon insertion of a valid smart card. The one certain way to ensure that a CAC reader is working correctly is to look for the CHUID number in the *CHUID* field of the Smart Card page. If a user inserts a card into a CAC reader and the CHUID number is not displayed, either the card is an invalid or damaged smart card, or the CAC reader is not connected to the touch panel or otherwise damaged.

For further information on using a CAC reader with a Modero touch panel, please refer to the video available at the AMX Configure channel on YouTube: http://www.youtube.com/user/AMXconfigure.

Breakout Box

Use the *Breakout Box* page to configure the touch panel to receive signals from a MXA-MP Multi Preview or MXA-MPL Multi Preview Live devices for video stream display.

If a Breakout Box is not connected to the panel's network, all fields but the Breakout Box button will be empty.

For more information on operation and configuration of an MXA-MP or MXA-MPL, refer to the *MXA-MP/MPL Operation Reference Guide*, available at www.amx.com.

FIG. 36 Breakout Box page

Breakout Box Page	
Breakout Box:	Click this button to enable the touch panel to receive information from the device.
Version:	Displays the current firmware version on the Breakout Box.
Serial Number:	Displays the serial number of the Breakout Box.
MAC Address:	Displays the MAC address of the Breakout Box.
Input Information:	Displays the video format and resolution coming from the video input port.
Stream Information:	This feature is currently disabled.

Configuring the Touch Panel

1. From the Breakout Box page, press the **Breakout Box** button to enable the panel to receive information from the Breakout Box.
2. If the device is connected, the remaining information on the *Breakout Box* page will self-populate as the panel receives that information from the Breakout Box.

NOTE

If the device is not connected to the touch panel at this time, any attempts at enabling the device will fail, and the Breakout Box *page will be blank other than the* ***Breakout Box*** *button.*
If an MXA-MP or MPL is not connected to the touch panel, the Breakout Box button MUST be disabled to prevent network conflicts.

Configuration

The *Configuration* page (FIG. 37) allows confirmation of and changes to panel configuration information.

FIG. 37 Configuration page

Configuration Page	
Panel:	Select this to open the *Panel Configuration* page (page 24).
Admin:	Select this to open the *Admin Configuration* page (page 30).
SIP:	Select this to open the *SIP* page (page 36).
Advanced:	Select this to open the *Advanced Config* page (page 38).
Reboot:	Press and hold this button for two seconds to reboot the touch panel.
Shutdown:	Press and hold this button for two seconds to shut down the touch panel.

Panel Configuration

The *Panel Configuration* page (FIG. 38) allows configuration and updating of the touch panel's device name and device number, access to power management and G4 Web control features, and configuration of the panel's motion and light sensors.

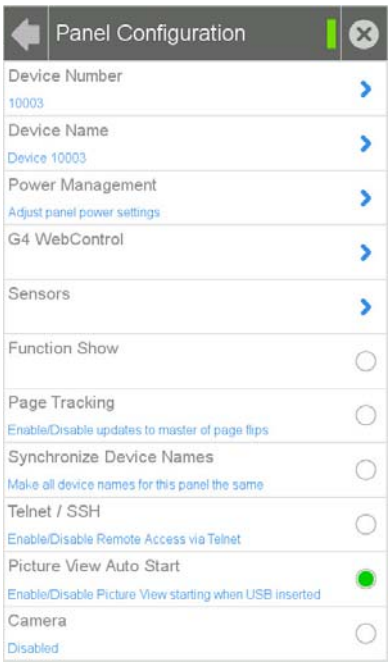


FIG. 38 Panel Configuration page

Panel Configuration Page	
Device Number:	Press to open a keypad used to view or change the device number of the panel.
Device Name:	Press to open a keyboard used to view or change the device name used for the panel.
Power Management:	Press to open the *Power Management* page (page 26).
G4 Webcontrol:	Press to open the *G4 Web Control* page (page 26).
Sensors:	Press to open the *Sensor Settings* page (page 27).
Function Show:	When the *Function Show* feature is displayed, the Channel Port and Code will appear in yellow, the Address Port and Code in blue, and the Level Port and Channel Code in purple (FIG. 44).
Page Tracking:	Press to enable or disable the panel sending page flip tracking to the Master.
Synchronize Device Names:	Press to synchronize the Device Name, Hostname, and G4 Web Control Names (page 29). If this is enabled, only the Device Name can be modified, but this will be populated to the other names as well.
Telnet/SSH:	Press to enable or disable remote access to the panel via Telnet.
Picture View Auto Start:	Press to allow Picture View to start automatically once the panel detects a suitable USB stick.
Camera:	Press to enable or disable camera output. ***Note:*** *Disabling camera output will completely disable the camera from being visible on the touch panel screen and prevent its input from being exported to the MicroUSB port.* ***Note****: This button is not visible on Modero X/S Series G4 panels without a camera (including portrait wall panels and all "No Comm" panels).*

Changing the Device Number

To change the touch panel's Device Number within the network:

1. From the *Panel Configuration* page, select the *Device Number* field. This opens the *Device Number* keypad (FIG. 39).

FIG. 39 Device Number keypad

2. Enter the new device number and press **OK**.
3. The *Device Number* field in the *Panel Configuration* page will now display the new device number.

Changing the Device Name

To change the name associated with the touch panel:

1. From the *Panel Configuration* page, select the *Device Name* field to open the *Device Name* keyboard (FIG. 40).

FIG. 40 Device Name keyboard

2. Enter the new device name and press **OK**.

Power Management

The options on the *Power Management* page (FIG. 41) allow setting of display timeout and shutdown preferences.

FIG. 41 Power Management page

Power Management Page	
Display Timeout:	This value determines the number of seconds, minutes, or hours that need to pass before the panel automatically goes into Sleep Mode. Once asleep, the device may be awakened by touching the **Sleep** button on the top of the panel or the screen itself. Use the **Up/Down** arrows to change the settings; a value of Off disables this feature. Range = 10, 15, 20, 25, 30 seconds; 5, 15, 30 minutes; 1, 2 hours Default = Off
Panel Shutdown:	This value determines the number of seconds, minutes, or hours that need to pass before the panel automatically shuts down. Use the **Up/Down** arrows to change the settings; a value of Off disables this feature. Range = 3, 5, 10, 15, 30 minutes; 1, 2, 3, 4 hours Default = Off

G4 WebControl

The options on the *G4 WebControl* page (FIG. 42) allow you to enable or disable G4 WebControl functionality.

An on-board VNC (Virtual Network Computing) server allows the panel to connect to any remote PC running a VNC client. Once connected, the client can view and control the panel remotely.

FIG. 42 G4 WebControl page

G4 WebControl Page	
G4 WebControl:	The **G4 Web Control** button toggles between the two G4 activation settings: • **Off** - deactivates G4 Web Control on the panel. • **On** - activates G4 Web Control on the panel.
Timeout:	Sets the length of time (in minutes) that the panel can remain idle, detecting no cursor movements, before the G4 Web Control session is terminated. • Minimum value = Off (panel never times out) • Maximum value = 4 h (panel times out after 4 hours)
Name:	Use this field to enter a unique alpha-numeric string to be used as the panel's display name. If the Synchronize Device Names option (page 29) is enabled, this field will be disabled.
Password:	Use this field to enter the G4 Authentication session password required for VNC access to the panel.
Port:	Use this field to enter the number of the port used by the VNC Web Server. Default = 5900.
Maximum Connections:	Displays the maximum number of users that can be simultaneously connected to this panel via VNC. Press this field to increase the number allowed to connect to this panel. Default = 1.
Current Connections:	Displays the number of users currently connected to this panel via VNC.

NOTE

Modero XS Series G4 touch panels accelerate graphics rendering through hardware, not software. When accessing the panel via VNC, a separate software graphics engine is used, which may slow down graphics and panel responsiveness. In addition to slowing down graphics and panel responsiveness, any video and animated transitions will not be visible over VNC.

Sensor Settings

The *Sensor Settings* page (FIG. 43) allows activation and optimization of the touch panel's motion and light sensors.

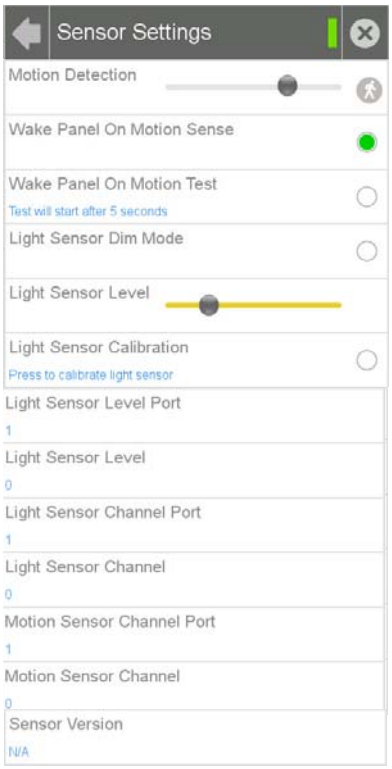


FIG. 43 Sensor Settings page

Sensor Settings Page	
Motion Detection:	• The yellow indicator shows the current motion sensor reading. • The movable circle sets the motion sensor threshold.The threshold controls when a motion sensor channel is on. • The “walk” icon with also change color from grey to green when the threshold is crossed.
Wake Panel on Motion Sense:	Click this button to wake up the panel if any motion detected crosses the threshold set by the Motion Detection slider.
Wake Panel on Motion Test:	This button will only be enabled if *Wake Panel On Motion Sense* is enabled. Pressing the test button will initiate a test mode where the display will go to sleep and wait for motion to turn it on. It can be used to test your current Motion Detection threshold value.
Light Sensor Dim Mode:	Click this button to set the light sensor for dim lighting conditions.
Light Sensor Level:	• The yellow indicator displays the current light sensor reading. • The movable circle indicates the light sensor threshold. • The threshold controls when a Light Sensor Channel Code press will be generated.
Light Sensor Calibration:	Click this button to perform a calibration on the light sensor.
Light Sensor Level Port:	This displays the current level port being used by the light sensor (default = 1).
Light Sensor Level:	This displays the current level being used by the light sensor (default = 0).
Light Sensor Channel Port:	This displays the current channel port being used by the light sensor (default = 1).
Light Sensor Channel:	This displays the current channel being used by the light sensor (default = 0).
Motion Sensor Channel Port:	This displays the current channel port being used by the motion sensor (default = 1)..
Motion Sensor Channel:	This displays the current channel being used by the motion sensor (default = 0).
Sensor Version:	This displays the current sensor version, if applicable.

NOTE

Light and motion sensor ports, levels, and channels are configured in TPDesign4. For more information on configuring light and motion sensors, please refer to the TPDesign4 Operation/Reference Guide*, available at* ***www.amx.com****.*

Calibrating the Light Sensor

When the touch panel is installed for the first time, the light sensor should be calibrated to the room’s maximum ambient light condition. This calibration setting will be saved until the panel’s system settings are reset (for more information, please refer to the *Panel Configuration* on page 24).

To calibrate the light sensor from the *Settings* pages:

1. From the *Sensor Settings* page, click the **Light Sensor Calibration** button.
2. Give the panel 10 seconds to calibrate the room's ambient light level. The indicator next to the button will flash green while calibration is in progress.

If necessary, the touch panel light calibration may also be done remotely through a Telnet connection. To calibrate the light sensor via Telnet:

1. Telnet into the touch panel.
2. Type “light cal 1".
3. Give the panel 10 seconds to calibrate the room's ambient light level.

Function Show Example

When the Function Show feature is displayed, the Channel Port and Code will appear in yellow, the Address Port and Code in blue, and the Level Port and Code in purple (FIG. 44).

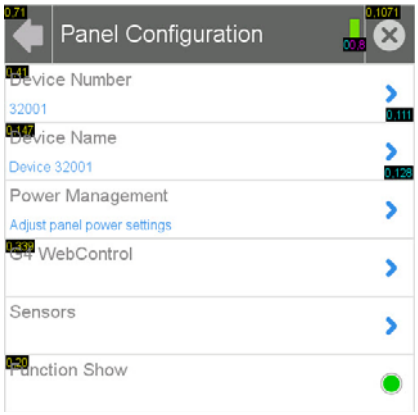


FIG. 44 Function Show

Synchronizing Device Names

For ease of connectivity, it may be desirable or necessary to make sure that all of the names registered with the panel are the same. Enabling the **Synchronize Device Names** button synchronizes these names, tracking any changes to the current Device Name setting. If this button is disabled, Hostname and G4 Web Control names may be changed individually.

NOTE

The Synchronize Device Names button is disabled by default.

To synchronize all device names used by a panel:

1. From the *Panel Configuration* page, select the **Synchronize Device Names** button.
2. A System Message popup window appears, giving the option to synchronize multiple names to the Device Name (FIG. 45). When a five-second timer ends, the **Yes** button will be enabled.

FIG. 45 System Message: This will synchronize the following values to Device Name

3. Click **Yes** when enabled. This will automatically synchronize all names to the current Device Name.

Admin Configuration

The *Admin Configuration* page (FIG. 46) allows control of access to the *Settings* pages, passwords, security settings, and the ability to install firmware or touch panel pages from various sources.

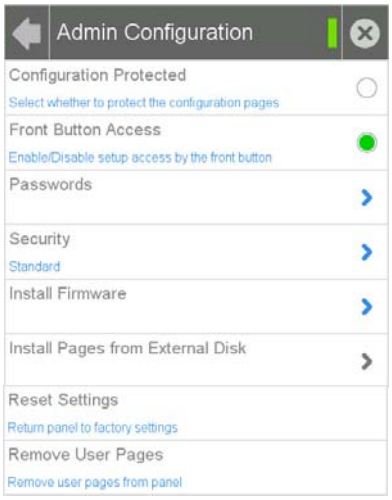


FIG. 46 Admin Configuration page

Admin Configuration Page	
Configuration Protected:	Press this button to protect the *Settings* pages from access without a password.
Front Button Access:	Press this button to enable or disable the ability to access the *Settings* pages from the **Sleep** button (FIG. 1). ***Note:*** *If Sleep button access is disabled, the Settings page can be through the splash page, as shown in the Accessing the Settings Page* section on page 3*. The Settings page may also be accessed via Telnet, send command, or a preconfigured setup button on touch panel pages.*
Passwords:	Select this to access the *Passwords* page (page 30).
Security:	Select this to open the *Security* page (page 32).
Install Firmware:	Select this to access the *Install Firmware* page (page 33).
Install Pages from External Disk:	Select this to install touch panel pages from an external disk, such as a USB stick. If an external disk is not connected to the touch panel, this field will be disabled.
Reset Settings:	Select this to reset all settings and return them to the panel's factory defaults.
Remove User Pages:	Select this to remove all currently loaded user pages from the panel.

Admin Passwords

The options on the *Admin Passwords* page allow assignment of passwords required for users to access the secured *Settings* pages.

FIG. 47 Admin Passwords page

Admin Passwords Page	
Password 1-4	Accesses the alphanumeric password. Select PASSWORD 1, 2, 3, or 4 to open a keyboard to enter alphanumeric values associated with the selected password.
Password 5 (protected):	Accesses the alphanumeric values associated to particular password sets. Select PASSWORD 5 (protected) to open a keyboard to enter alphanumeric values associated with the selected password. ***Note**: Clearing Password #5 removes the need to enter a password before accessing secured Settings pages.*

Changing A Previously Established Password

1. In the *Passwords* page, select the appropriate entry for the particular password to be changed. This opens a password keyboard (FIG. 48).

FIG. 48 Password 1 keyboard

Password 5 (FIG. 47) is protected, and can only be changed by the Administrator.

FIG. 49 Protected Password 5 keyboard

2. In the *Password* keyboard, enter the new alphanumeric password.
3. Press **OK** when complete.

Security

The *Security* page (FIG. 50) allows you to select between the three security options available on the panel: *Standard*, *Secure*, and *DoD*.

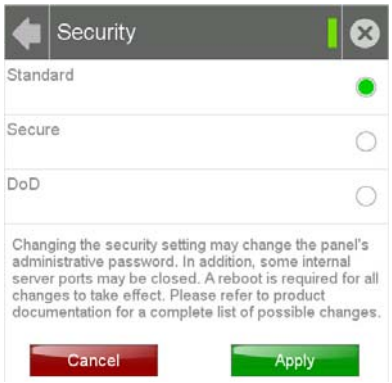

Security
Standard
Secure
DoD
Changing the security setting may change the panel's administrative password. In addition, some internal server ports may be closed. A reboot is required for all changes to take effect. Please refer to product documentation for a complete list of possible changes.
Cancel
Apply

FIG. 50 Security page

Security Page	
Standard:	Click this button to set security to *Standard* (see below).
Secure:	Click this button to set security to *Secure* (see below).
DoD:	Click this button to set security to *DoD* (see below).
Cancel:	Click this button to return to the *Admin Configuration* page without saving any changes made to this page.
Apply:	Click this button to save any changes made to this page and return to the *Admin Configuration* page.

Each of the settings on this page has different features for touch panel security:

Security Profile Features	
Standard:	• Factory default, shipped in this configuration. • Default Password is *1988*. • Remote login uses Telnet.
Secure:	• Default Protected Setup Password is *Amx1234!*. • Minimum password requirement is 8 characters with at least one numeric character. • Remote login uses SSH. • Remote login user name is *amx*. • Login failure attempt pauses 4 seconds before another login attempt is allowed. • After 3 consecutive unsuccessful SSH login attempts, login lockout is enabled for 15 minutes. • Login and logout audit logging is enabled.
DoD:	• Default Protected Setup Password is *Amx1234!*. • Minimum password requirement is 8 characters with at least one numeric character, one uppercase character, one lower case character, and one special character, with no duplicate adjacent characters. • Remote login uses SSH. • Remote login user name is *amx*. • Login failure attempt pauses 4 seconds before another login attempt is allowed. • After 3 consecutive unsuccessful SSH login attempts, login lockout is enabled for 15 minutes. • Login and logout audit logging is enabled. • DoD login banner is enabled.

A transition from one security mode to another will reset the Protected/Web Control/remote login password to the default value for the current security mode (please refer to the default passwords above).

A transition to Secure or DoD mode will disable G4 Web Control. Although the security password features are immediate, a reboot must occur for all the new security mode features to take full effect.

NOTE

Changing the security setting will also change the G4 Web Control password. This must be reset from the G4 WebControl on page 26 *before you can access the panel via VNC.*

Install Firmware

The *Install Firmware* page (FIG. 51) allows the touch panel to be reloaded with its original factory-loaded firmware, installed with a previous version of the current firmware, or to install new firmware from an external storage disk, such as a USB stick.

FIG. 51 Install Firmware page

Install Firmware Page	
Factory:	Select this to revert the panel back to its original factory-loaded firmware.
Previous:	Select this to re-install the last previously loaded firmware version.
New:	Select this to install new firmware from an external disk, such as from a USB stick. ***Note:*** *if the panel does not detect an external disk containing firmware, this will be disabled.*

Resetting to Factory-Installed Firmware

In certain circumstances, it may be necessary to uninstall the current firmware on a touch panel and return the panel to its original factory default firmware. To reset the touch panel to its original factory firmware via the *Settings* pages:

1. From the *Install Firmware* page, select the *Factory* field.
2. A System Message window appears, asking "Are you sure you want to install the following firmware?", with the version "Factory Firmware" listed below (FIG. 52).

FIG. 52 Install Factory Firmware system message

3. Within five seconds, the **Yes** button will be enabled. At that time, select **Yes** to install the factory firmware and **No** to return to the *Install Firmware* page.
4. If you choose **Yes**, the touch panel will reboot and restart with the factory default firmware.

To reset the touch panel to its original factory firmware from the panel bootup:

1. Immediately after the touch panel boots up, the device's splash page appears on the screen (FIG. 53). Press the three indicator dots within the first three seconds, before they start moving, to reset the firmware.

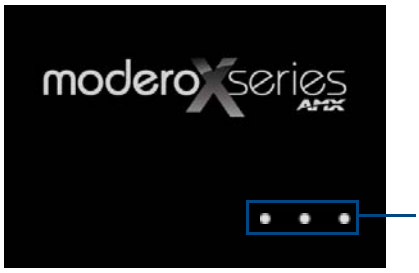


FIG. 53 Modero X Series splash page

2. The new confirmation page informs you that a panel reset to its original factory firmware may result in a loss of data (FIG. 54). Click **Yes** to confirm that you wish to continue the resetting process and click *No* to return to the splash page.

FIG. 54 Factory Reset confirmation page

3. The touch panel will now reset to its original factory firmware and restart.

NOTE

Resetting the touch panel to its original factory firmware will remove all previous changes to the Settings pages.

Installing Previous Firmware

In certain circumstances, it may be necessary to revert to a previously installed version of the touch panel firmware.To reset the touch panel to its previously installed firmware via the *Settings* pages:

1. From the *Install Firmware* page, select the *Previous* field.
2. A System Message window appears, asking “Are you sure you want to install the following firmware?”, with the previous firmware version listed below (FIG. 55).

FIG. 55 Install Previous Firmware system message

3. Within five seconds, the **Yes** button will be enabled. At that time, select **Yes** to install the previous firmware version and **No** to return to the *Install Firmware* page.
4. If you choose **Yes**, the touch panel will reboot and restart with the previously installed firmware.

Installing New Firmware From an External USB Stick

For more information on updating firmware for your touch panel, particularly concerning the format and the directory placement of the firmware upgrade, please refer to the *Upgrading Firmware* section of the touch panel's Operation Reference Guide (available at www.amx.com).

Installing New Firmware From an External Disk Via the Settings Pages

1. Download the latest Modero X/S Series G4 touch panel firmware from **www.amx.com** and save it to a USB stick.

NOTE

The firmware must be saved in a folder in the USB stick directory, corresponding with the touch panel model, in order to be recognized by the touch panel. For instance, firmware for an MXD-2000XL-PAN must be saved in a folder named "mxd-2000xl-pan" to be recognized by the panel. The folder name is not case sensitive.

2. Insert the USB stick into an available USB port. This may require disassembling wall-mounted touch panels to access the USB ports if a USB extension was not already installed.
3. From the *Install Firmware* page, select the *New* field.
4. A System Message window appears, asking "*Are you sure you wish to install the following firmware?*". The option to choose **Yes** will be enabled after five seconds. Press **Yes** to load the firmware listed, and **No** to return to the *Firmware Installation* popup window.
5. The device will now upload the new firmware and then reboot.

Installing New Firmware From an External USB Stick From the Panel Bootup

1. Before starting, download the firmware .kit file to a USB stick and connect the USB stick to the touch panel's USB A port.
2. Reboot the touch panel.
   - When the touch panel restarts, the device will detect the firmware upgrade and display a screen requesting that you touch the screen to initiate an update (FIG. 56).

FIG. 56 Update initiation screen

   - If you do not touch the screen within three seconds, the firmware update will not be initiated and the panel will boot up normally (FIG. 57).

FIG. 57 Firmware Not Initiated screen

3. After pressing the screen to initiate the update, a new screen appears, informing you that the upgrade is in progress (FIG. 58).

FIG. 58 Upgrade In Progress screen

4. Once the upgrade is complete, the touch panel will automatically reboot with the new firmware.
5. You may remove the USB stick from the USB A port once the dots in the splash page (FIG. 53) start moving. If you do not remove the USB stick, the update initiation screen will appear again. At this point, do not touch the screen, and the reboot will continue.

SIP

The options on the *SIP* page (FIG. 59) enable you to establish network settings for using your touch panel as an IP phone. With a CSG SIP Communications Gateway (**FG2182-01, -02, -03**), you can use your touch panel to make and receive local, long distance, and international phone calls, and have access to phone features like call waiting, caller ID, call forwarding, call queuing, and voice mail. Setting up your touch panel as a telephone requires that you set it up as one in the CSG SIP Communications Gateway.

Refer to the *CSG SIP Communications Gateway Operation/Reference Guide* for information on setting up your touch panel to work as a telephone.

FIG. 59 SIP page

You may need to load a Duet module to enable the touch panel to receive SIP calls.

NOTE

A sample UI module is provided in the module package. It is not intended to cover every possible application, but can be expanded as needed by a dealer to meet the requirements of a particular installation.

The Duet module translates between the standard interface and the device protocol. It parses the buffer for responses from the device, sends strings to control the device, and receives commands from the UI module or telnet sessions. Refer to the documentation supplied with the Duet Module for more details.

SIP Page	
SIP:	This option enables the SIP Stack on startup. If you disable this option, the panel will not attempt to read the rest of the configuration and will not register with a proxy server. However, point-to-point SIP will still be enabled allowing for existing intercom functionality.
Status:	This option displays whether you are connected to the proxy server.
Proxy Address:	This option enables you to enter the IP address or DNS name of the proxy server used as the SIP gateway.
Port Number:	The option displays the port you use to connect to the proxy server. The standard SIP port is 5060, but some providers use different ports.

SIP Page (Cont.)	
STUN Server:	This option enables you to enter the IP address or DNS name of the Simple Traversal of UDP through NATs (STUN) server. This field is optional.
Cancel:	Press the **Cancel** button to return to the *Configuration* page without saving any changes made on the *SIP* page.
Save:	Touch the **Save** button to save the changes and return to the *Configuration* page.

Changing the SIP Proxy Address

To change the SIP proxy address:

1. From the *SIP* page, select the *Port Number* field to open the *SIP Proxy Address* keyboard (FIG. 60).

FIG. 60 SIP Proxy Address keyboard

2. Enter the new proxy address and click **OK**.
3. Click **Save** to save your changes to the *SIP* page and return to the *Configuration* page.

Changing the SIP Port Number

To change the port number used by the proxy server:

1. From the *SIP* page, select the *Port Number* field to open the *SIP Port Number* keypad (FIG. 61).

FIG. 61 SIP Port Number keypad

2. Enter the new port number and click **OK**.
3. The SIP page will now display the new SIP port number in the *Port Number* field.
4. Click **Save** to save your changes to the *SIP* page and return to the *Configuration* page.

Changing the SIP STUN Address

To change the STUN address:

1. From the *SIP* page, select the *STUN Server* field to open the *SIP STUN Address* keyboard (FIG. 62).

FIG. 62 SIP STUN Address Keyboard

2. Enter the STUN server address and click **OK**.
3. Click **Save** to save your changes to the *SIP* page and return to the *Configuration* page.

Advanced Config

The *Advanced Config* page (FIG. 63) displays options for more advanced configuration options, such as running diagnostics or modifying the options for streaming video.

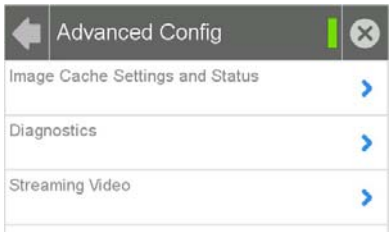


FIG. 63 Advanced Config page

Advanced Config Page	
Image Cache Settings and Status:	Select this to open the *Cache Settings* page (page 38)
Diagnostics:	Select this to open the *Diagnostics* page (page 39).
Streaming Video:	Select this to open the Streaming Video page (page 42).

Cache Settings

The options on the *Cache Settings* page (FIG. 64) allow setting and clearing of the flash memory cache, as well as viewing the status of the current cache settings. The G4 graphics engine caches images to decrease load time of previously viewed images. RAM caching is always enabled, and both static and dynamic images are stored in the RAM cache as they are viewed.

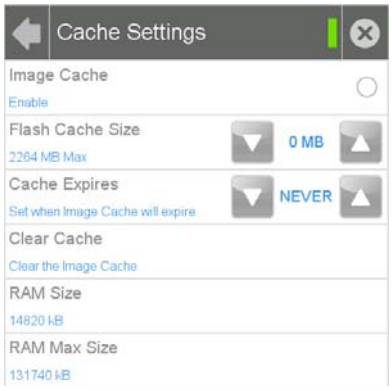


FIG. 64 Cache Settings page

The size of RAM cache is automatically configured to take into account available memory versus memory that may be needed by the panel later. As the RAM cache approaches its maximum size, the oldest items in the cache may be discarded to make room for newer items.

If Flash caching is enabled, dynamic images that would have been discarded will actually be moved to Flash, since retrieving images on Flash is typically faster than across a network, although it is slower than using a RAM cache.

Note that since static images are already stored on Flash, they are never moved to the Flash cache, so Flash caching applies only to dynamic images. Images in Flash cache are moved back to RAM cache the next time they are viewed. As the Flash cache approaches its maximum size, the least recently used items may be discarded to make room for new items.

Cache Settings Page	
Image Cache:	Click this button to enable or disable the image Flash cache.
Flash Cache Size:	Use the **Up/Down** buttons to increase or decrease the total size of the flash memory cache. The maximum size is displayed in this field.
Cache Expires:	Use the **Up/Down** buttons to control the amount of time elapsed before the panel automatically deletes its cache, with increments of 2 hours, 8 hours, 1 day, 2 days, 5 days, and “NEVER”.
Clear Cache:	Clears all files previously stored in the flash and RAM memory caches.
RAM Size:	Displays the current size of RAM-cached items.
RAM Max Size:	Displays the maximum RAM size for this panel before the least recently used items are discarded.

Diagnostics

The *Diagnostics* page (FIG. 65) allows access to panel logs, network statistics, ICSP statistics, and the panel connection utility.

FIG. 65 Diagnostics page

Diagnostics Page	
Logs:	Click this button to open the *Logs* page (page 40).
Network Statistics:	Click this button to open the *Network Statistics* page (page 40).
ICSP Statistics:	Click this button to open the *ICSP Statistics* page (page 41).
Connection Utility:	Click this button to open the *Connection Utility* page (page 41).

Logs

The *Logs* page (FIG. 66) chronicles all previous connections between the device and the network.

FIG. 66 Logs page

Logs Page	
Clear:	Clears all connection logs.
Refresh:	Refreshes displayed log information.
Page:	Displays the current log page number. Use the **Up**/**Down** arrows to select log pages.

Network Statistics

The *Network Statistics* page (FIG. 67) displays received and transmitted IP packets. Touch the **Refresh** button to return the counters to their placement before the latest update.

Network Statistics
RX packets:91146 errors:0 dropped:0 overruns:0 frame:0
TX packets:48854 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:7854506 (7.4 MiB) TX bytes:6819292 (6.5 MiB)
Refresh

FIG. 67 Network Statistics page

Network Statistics Page	
Refresh:	Refreshes all data on this page.

ICSP Statistics

The *ICSP Statistics* page (FIG. 68) collects the number of ICSP messages received by the touch panel.

FIG. 68 ICSP Statistics page

ICSP Statistics Page	
ICSP:	• *Received*: Lists the number of ICSP messages received since the last time the page was cleared or refreshed, or within the last 15 minutes. • *Processed*: Lists the number of ICSP messages processed since the last time the page was cleared or refreshed, or within the last 15 minutes. • *Dropped*: Lists the number of ICSP messages dropped since the last time the page was cleared or refreshed, or within the last 15 minutes.
Blinks:	• Received: Lists the number of ICSP messages dropped since the last time the page was cleared or refreshed, or within the last 15 minutes. • Missed: Lists the number of blink messages received since the last time the page was cleared or refreshed, or within the last 15 minutes.
Clear:	Clears all fields.
Refresh:	Refreshes all data.

Connection Utility

The *Connection Status* page (FIG. 69) displays the current connection information, including the latest Master and panel IP address information.

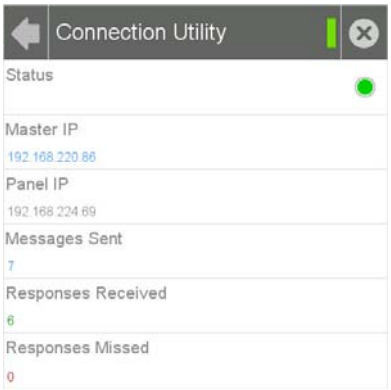


FIG. 69 Connection Utility page

Connection Utility Page	
Status:	Click this button to enable the Connection Utility page.
Master IP:	The IP address for the network's Master.
Panel IP:	The IP address used by the device.
Messages Sent:	Lists the number of queries sent to the Master.

Connection Utility Page (Cont.)	
Responses Received:	Lists the number of responses received from the Master.
Responses Missed:	Lists the number of responses missed by the Master.

Streaming Video

NOTE

This page is not available on Modero X/S Series G4 panels without a camera (including portrait wall panels and all "No Comm" panels).

The *Streaming Video* page (FIG. 70) is used to preview video sources, as well as the touch panel's camera.

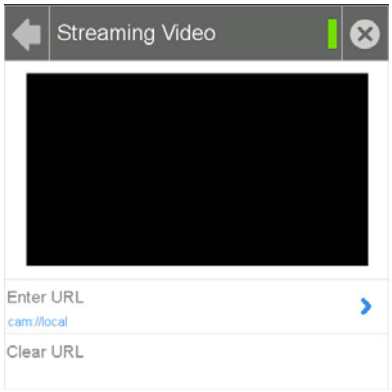


FIG. 70 Streaming Video page

The *Streaming Video* page may also be used to preview other video sources, such as those coming through an MXA-MP or MXA-MPL. For more information on these devices, please refer to the *MXA-MP and MXA-MPL Programming* section on page 53.

Streaming Video Page	
Enter URL:	Select this to enter the URL for the video stream to be displayed. The default is the touch panel's camera, if applicable.
Clear URL:	Select this to clear the current streaming video URL being displayed.

- When the camera is enabled, an LED next to the camera will light to indicate that it is on.
- If the camera is currently enabled, the camera output will be switched to the MicroUSB port unless the camera is currently displayed on the touch panel's screen.

NOTE

For more information on the functionality of the MicroUSB port, please refer to the Operation Reference Guide for the particular panel model, available from www.amx.com.

Entering a Streaming Video URL

1. From the *Streaming Video* page, select *Enter URL* to open the *Set URL* keyboard (FIG. 71).

FIG. 71 Set URL keyboard

2. Enter the URL for the camera and click **OK**.

NOTE

*To preview the touch panel's camera feed, enter "**cam://local**".*

3. The camera feed will now appear in the *Streaming Video* page window.

Routing the Touch Panel's Camera and Audio Input to a PC

In touch panels with camera functionality, both camera and audio input may be routed through the touch panel's MicroUSB port to a host PC, much like the input from a Webcam. The camera and audio will only be exported if the camera is enabled in the *Panel Configuration* page (page 24).

To route the touch panel's camera and microphone input:

1. Connect the touch panel to the host PC via the touch panel's Micro-USB port.
2. Power up the touch panel.
3. In the Windows **Start** bar, select *Control Panel*.
4. From the *All Control Panel Items* window, open *Devices and Printers*.
5. The camera will appear in the *Devices* listing (FIG. 72).

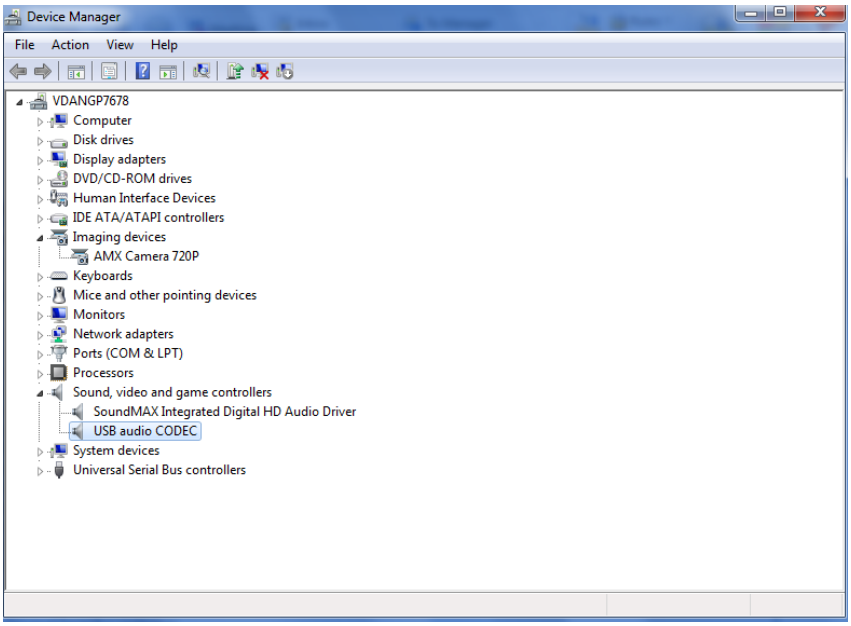


FIG. 72 Touch Panel camera appearing in the Devices listing

Both the camera and audio can be routed through the panel's MicroUSB port to a host PC. The microphone and camera will appear as 2 separate USB devices on the host.

If you preview the camera via the touch panel, the camera's input will no longer be routed to the host PC. Camera input can only be routed to the panel or to the PC at any given time.

The output from a Modero X/S Series G4 touch panel microphone is PCM.

Transitions and Gestures

Overview

You can program Modero X Series touch panels, using the commands in this section, to perform a wide variety of operations using Send Commands and variable text commands.

A device must first be defined in the NetLinx programming language with values for the Device: Port: System (in all programming examples - ***Panel*** is used in place of these values and represents all Modero panels).

WARNING

Verify you are using the latest NetLinx Master and Modero firmware, as well as the latest version of NetLinx Studio and TPD4.

NOTE

*For more information on gestures and on designing touch panel pages, please refer to the TPDesign4 online help, available at **www.amx.com**.*

Animated Transitions

Animated transitions are used to add motion and effects to the transition from one page to another on a panel. With existing panel firmware, page flip transitions occur with the new page immediately drawing over the existing page on the screen. With animated transitions, the old page is moved, faded, or overdrawn from the screen while the new page is drawn. These operations use the OpenGL hardware accelerator to ensure smooth transitions.

Current panel firmware also supports animated buttons and popup page effects. This functionality is unchanged.

In all cases, once the transition is triggered, the old page is frozen. For example, if the old page had an animated button, the motion on that button would stop as soon as the transition is triggered. In the case of motion on the new page, such as an animated button or even a popup effect, this motion will operate even while the overall page itself is in motion as part of the transition.

Eighteen different classes of transitions are supported. Each transition class is described below. “Origins” refers to the side or corner of the screen where a transition starts, and “Default” refers to where the transition will start unless otherwise selected. All of the transition classes are commanded transitions. Once the transition is triggered, it proceeds to completion.

Transition Classes

Transition	Transition Description	Origins	Default
Slide	The current page slides off of the screen and the new page slides in until it completely covers the screen and stops. There is no gap between pages, so if the page backgrounds match, this effect can give the appearance of moving around on a canvas that is larger than the physical screen size.	Top Left Right Bottom	Right
Slide with bounce	This is the same as a slide transition, but with a bounce effect added when the new page reaches the edge of the screen across from where it originated.	Top Left Right Bottom	Right
Black glass	The existing page appears to move away from the viewer and off to the side. As soon as it is completely off the screen, the new page moves in and toward the viewer from the opposite edge of the screen. Both the old and new pages have a reflection on the bottom that makes it appear that the page is sliding along black reflective glass.	Left Right	Right
Fade	The current page fades out while the new page fades in.	Center	Center
Door with fade	The new page moves over the existing page like a door with a hinge at the edge of the LCD. In addition, the new page is semi-transparent, allowing the old page to be seen through until the transition is finished, at which point the old page has faded away.	Top Left Right Bottom	Right

Transition Classes (Cont.)			
Transition	**Transition Description**	**Origins**	**Default**
Center door with fade	This transition operates as above, except that the hinge point is at the center of the LCD rather than the edge.	Top Left Right Bottom	Right
Zoom In	The new page appears from the center of the panel and expands outward.	Center	Center
Zoom Out	The new page appears from the outside edges of the panel and contracts inward to the center.	Center	Center
Implode	The new page collapses to the center of the panel.	Center	Center
Explode	The new page expands from the center of the panel.	Center	Center
Spin In	The new page spins inward to the center of the panel.	Center	Center
Spin Out	The new page spins outward from the center of the panel.	Center	Center
Waves	The new page waves, like a flag, from its origin to its programmed location.	Center	Center
Flip Card	The new page flips, like a playing card, from its origin to its programmed location.	Top Left Right Bottom	Right
Slats	The new page opens, like the slats in a window blind, from its origin to its programmed location.	Top Left Right Bottom	Right
Squish	The previous page compresses in the direction of the origin, revealing the new page.	Top Left Right Bottom	Right
Tumble	The new page flips end-over-end from the origin site, covering the previous page.	Lower left Upper left Lower right Upper right	Lower Right
Wipe	A wipe bar travels across the page from the origin, revealing the new page.	Top Left Right Bottom Lower left Upper left Lower right Upper right	Right

The origin of the transition is the point on the LCD where the motion originates. In most cases, these locations are the top, bottom, left and right of the screen. For example, a slide transition with a left origin will appear to slide in from the left towards the right of the screen. Some transitions may have an origin at the upper or lower corner on any given side, such as the upper right or the lower left. The table below lists both all of the valid origins available for a transition and the default origin.

Animated Page Transition Origins

Transition	Valid Origins	Defaults
Fade	Center	Center
Slide	Top, Left, Right, Bottom	Right
Slide With Bounce	Top, Left, Right, Bottom	Right
Center Door with Fade	Top, Left, Right, Bottom	Right
Door with Fade	Top, Left, Right, Bottom	Right
Black Glass	Left, Right	Right
Page Curl	Lower Left, Upper Left, Lower Right, Upper Right	Lower Right
Zoom In	Center	Center
Zoom Out	Center	Center
Implode	Center	Center
Explode	Center	Center
Spin In	Center	Center
Spin Out	Center	Center
Waves	Center	Center
Flip Card	Top, Left, Right, Bottom	Right
Slats	Top, Left, Right, Bottom	Right
Squish	Top, Left, Right, Bottom	Right
Tumble	Lower Left, Upper Left, Lower Right, Upper Right	Lower Right
Wipe	Top, Left, Right, Bottom, Lower Left, Upper Left, Lower Right, Upper Right	Right

The transition time is the amount of time required for the transition to operate from start to finish. This value can be specified from 0.3 seconds to 3.0 seconds in tenths of a second. If not specified, the default is 1.5 seconds.

Transition times are based on real world clock time and do not vary based on the speed of the processor or the frame rate at which the display system is running.

Since the transitions require OpenGL hardware acceleration, they are not seen by the user on a VNC connection. When a transition is triggered, the user will see a normal page flip to the new page on the VNC connection, while the animated transition occurs as expected on the panel.

Transition Commands	

^AFP	Flips to a page with the specified page name using an animated transition. If the page is active, do not redraw the current page.
	`Syntax: "'^AFP-<page name>,<animation>,<origin>,<time>'"`
	Variable:
	• page name = 1 - 50 ASCII characters. If the page name is blank, flips to the previous page.
	• animation, along with available origin values =
	Note: *If the animation is blank or invalid, the default is Fade.*
	Fade Center: available origin value is 1
	Slide: available origin values are 2, 3, 4, 5 (default is 5)
	SlideBounce: available origin values are 2, 3, 4, 5 (default is 5)
	cntrDrFade: available origin values are 2, 3, 4, 5 (default is 5)
	doorFade: available origin values are 2, 3, 4, 5 (default is 5)
	blkGlass: available origin values are 4, 5 (default is 5)
	pgCurl: available origin values are 6, 8, 7, 9 (default is 9)
	zoomIn: available origin value is 1
	zoomOut: available origin value is 1
	implode: available origin value is 1
	explode: available origin value is 1
	spinIn: available origin value is 1
	spinOut: available origin value is 1
	waves: available origin value is 1
	flipCard: available origin values are 2, 3, 4, 5 (default is 5)
	slats: available origin values are 2, 3, 4, 5 (default is 5)
	squish: available origin values are 2, 3, 4, 5 (default is 5)
	tumble: available origin values are 6, 8, 7, 9 (default is 7)
	wipe: available origin values are 2, 3, 4, 5, 6, 7, 8, 9 (default is 5)
	• Origin = number representing one of the following values for where the animated transition originates on the screen:
	1 - center
	2 - top
	3 - bottom
	4 - left
	5 - right
	6 - lower left
	7 - lower right
	8 - upper left
	9 - upper right
	If the origin is blank or invalid, the default is 5 (right).
	• time = transition time in tenths of a second (from 3 to 30 with 15 being the default)
	Time is the transition time in tenths of a second which can vary from 3 (0.3 seconds) to 30 (3.0 seconds). Values above or below these values will be clamped. If the time is blank, then the default is 1.5 seconds.
	Example:
	`SEND COMMAND Panel,"'^AFP-MAIN,slide,4,5'"`
	Flips to the page named 'MAIN' using the slide from left animated transition with a time of .5 second.
	`SEND COMMAND Panel,"'^APF-MAIN,tumble,9,10'"`
	Flips to the page named 'MAIN' using the tumble from the upper right animated transition with a time of 1 second.

Touch Gesture Recognition

Gesturing refers to the act of moving a finger or stylus across the overlay and having the panel recognize and process this motion as a gesture.

Once a gesture is detected, it is processed as another external button on the panel. This enables the user to design pages that translate gesture operations into any functionality available to external buttons. In addition, a gesture velocity is calculated and transmitted to the master along with the gesture type itself in a custom event message. Nothing will be processed if the external button associated with this gesture has no page flip operations programmed, is disabled, or has no values programmed for address, channel, level, string output or command output. The custom event, however, is always transmitted.

The following seven gesture types are supported:

- Swipe up
- Swipe down
- Swipe right
- Swipe left
- Clockwise circle
- Counter-clockwise circle
- Double-Tap

The Modero X Series introduces new multi-touch gestures as well:

- 2 Finger Swipe up
- 2 Finger Swipe down
- 2 Finger Swipe right
- 2 Finger Swipe left

Gesture Velocity

A gesture "velocity" is calculated to represent the speed of the gesture. This is done by measuring the time from when the user first presses the screen until the user releases. The following simplified velocities are supported and transferred to the master in the custom event message:

1. Fast
2. Normal
3. Slow

A precise velocity is sent in the custom event message which represents the velocity in terms of pixels per second for slides and circles. For a double tap, this value is the total time in milliseconds from the first press to the second release.

Gesture Prioritization

It is important to prioritize the operation of the presses, moves and releases of the user to avoid confusion over what the user intended. The following process is used to determine what the user meant whenever a gesture operation is defined globally or for this page.

Gesture Prioritization	
The user presses outside of a button or slider and moves before releasing.	The firmware will always try to recognize a gesture as long as the user moves at least 20 pixels before the release occurs.
The user presses inside of a slider and moves before releasing.	This will always be processed as a slider operation and no attempt will be made to recognize a gesture.
The user presses inside of a joystick button and moves before releasing.	This will always be processed as a joystick operation and no attempt will be made to recognize a gesture.
The user moves a movable popup page.	This will always be processed as a popup page move and not a gesture.
The user presses on a button and then moves.	In this case, the press will not be sent for the first 0.15 second. If the user has moved at least 60 pixels by this time, then a button press/release will not be processed, but this will be processed as a gesture. At 0.15 second, the button press is processed and once the user releases, the release is processed and no gesture recognition is attempted. To be clear, it is not necessary for the user to move off of a button to be considered a gesture, but to move at least 60 pixels in that first 0.15 of a second.

Gesture Prioritization (Cont.)	
The user double taps on a button or slider.	This will not be recognized as a gesture. This would be considered two quick press/release operations on the button or slider.
The user double taps outside of a button or slider.	This will be registered as a gesture.

Gesture VNC/Mouse Support

Gestures are recognized whether or not the user is using a finger or stylus on the panel's screen overlay, a mouse on a VNC connection, or a mouse connected to the local USB port on the panel.

Gesture Custom Event

Whenever a gesture is recognized and processed a custom event is also sent to the master. The following values describe this event:

```
CUSTOM_EVENT ADDRESS is 1
CUSTOM_EVENT EVENTID is 600
Custom.Value1 is the gesture number
Custom.Value2 is the simplified gesture velocity
Custom.Value3 is the precise gesture velocity
```

Gesture numbers are:

1. Swipe up
2. Swipe down
3. Swipe right
4. Swipe left
5. Clockwise circle
6. Counter-clockwise circle
7. Double-Tap

The Modero X Series introduces new multi-touch gestures as well:

8. 2 Finger Swipe up
9. 2 Finger Swipe down
10. 2 Finger Swipe right
11. 2 Finger Swipe left

Simplified gesture velocity values are:

1. Fast
2. Normal
3. Slow

Precise gesture velocity:

1. For slides and circles, this represents pixels per second.
2. For double taps, this is the time in milliseconds from the first press to the second release.

Enabling or Disabling the Gesture Custom Event

By default, a gesture custom event is sent to the master each time that a gesture is recognized. A send command has been added to allow disabling and re-enabling of this capability.

The value sent is not retained and gesture custom events will be enabled each time the panel restarts.

Gesture Custom Event Commands	
^GCE	Sets whether or not the panel sends a custom event to the master whenever a gesture is detected. Syntax: `"'^GCE-ON'" or "'^GCE-OFF'"` ***Note:*** *This setting is not retained and the default is to always send the events. To enable sending the event, the value after the dash can be "on", "ON", or "1". Anything else will disable sending custom events.*

MXA-MP and MXA-MPL Programming

Overview

The MXA-MP Modero X Series Multi Preview and MXA-MPL Multi Preview Live are touch panel accessories that display still images or an HD digital video stream on Modero X Series touch panels. The MXA-MP accepts analog or digital video inputs and converts them into up to 10 regularly refreshed JPEG preview images.

The MXA-MPL accepts analog or digital video inputs over HDMI and converts them to a video stream. Both devices make it easy for users to identify quickly what is currently being displayed by up to 10 source devices.

WARNING

Verify you are using the latest NetLinx Master and Modero firmware, as well as the latest version of NetLinx Studio and TPD4.

NOTE

For more information on the MXA-MP and MXA-MPL, such as firmware upgrades, please refer to the MXA-MP/MPL Operation Reference Guide*, available at* ***www.amx.com****.*

Configuring the Touch Panel

After physically connecting the device to the local network, and connecting the Modero X Series touch panel to the device, enable the device through the touch panel's *Breakout Box* page (FIG. 73). For more information on the *Breakout Box* page, please refer to the *Breakout Box* on page 22.

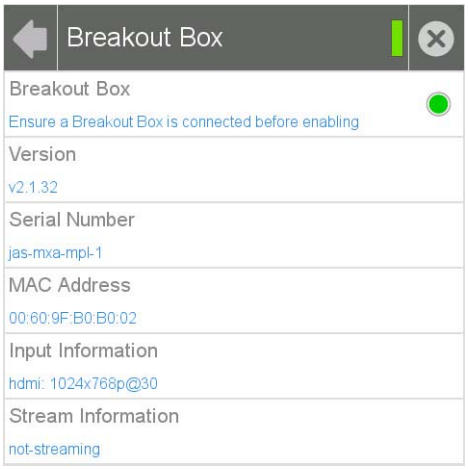


FIG. 73 Breakout Box page

Stand-Alone Images and Video Feeds

Adding a Preview Image to a Touch Panel Page

As an example of how to add a simple JPEG preview image to a touch panel page in TPDesign4:

1. From the main TPDesign4 menu, select **Panel / Resource Manager** and select the **Dynamic Images** tab.
2. Select a JPEG image in the project. In this example, call it *MXA_MP*.
3. In the *Edit Dynamic Image* window (FIG. 74), add a new resource. In the example.
   - *Protocol:* HTTP
   - *Host:* mxamp
   - *Path:* snapit
   - *File:* slot1.jpg

   In this example, make sure to use at least a 2-second Refresh Rate.

4. When finished, click **OK** and then **Close** to close the Resource Manager.

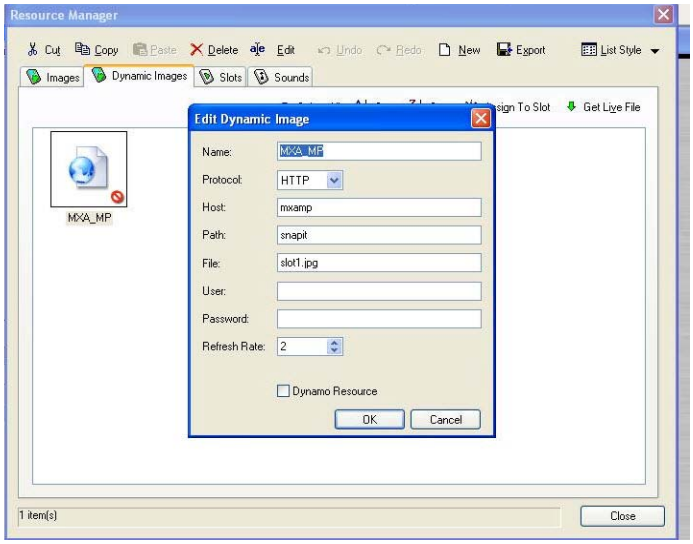


FIG. 74 Edit Dynamic Image window

5. After adding the Dynamic Image, assign the image as a Bitmap to a button on a touch panel page.

Adding a Live Motion Stream To A Touch Panel Page via an MXA-MPL

To add a live motion stream to a touch panel page via an MXA-MPL:

1. In the touch panel page, draw a button to be the video window.
2. In *Button Properties*, select *MXA-MPL* as the video fill (FIG. 75).

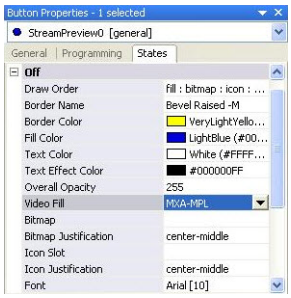


FIG. 75 Button Properties

NOTE

Any video button that has displayed video but is no longer active will display a snapshot of the last frame displayed.

Commands Through the Command Output Loopback Port (MXA-MPL Only)

If embedding them in TPDesign, send commands involving the MXA-MPL can be sent through the Command Output Loopback Port. In the *Button Properties* window, this may be found under the *Programming* tab.

The touchpanel file attachment example in FIG. 76 below has examples of preview and streaming windows, as well as a page to give examples of switching resolutions and signal types.

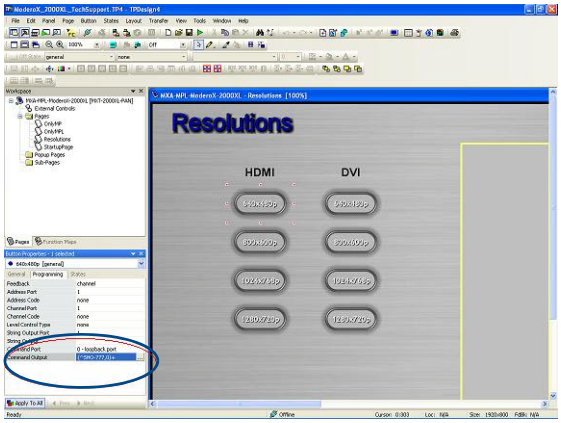


FIG. 76 Command Output Loopback Port

If you wish to embed commands in a button, these are done through the Command Output Loopback Port. This may be found in the Button Properties window, under the Programming tab. Click the "..." button to open the Button Command Output window (FIG. 77).

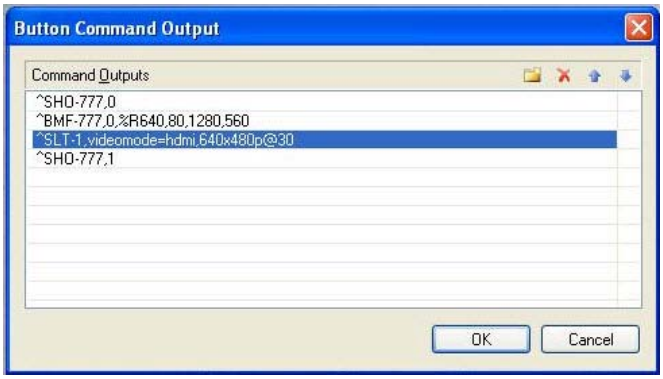


FIG. 77 Button Command Output popup window

In the above example, the commands added to the *Button Command Output* window hide the video window, resize the window, set the video mode to HDMI at 640x480@30 Hz, and show the video window.

NOTE

When using the MXA-MPL for displaying live motion streams, make sure to use the supported resolutions with the video input type. While the MXA-MPL is capable of supporting up to 60 Hz, the Modero X display panels that use MXA-MPL only support 25-30 Hz.

Supported Resolution/Signal Type Commands	
HDMI:	SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=hdmi,640x480p@30'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=hdmi,800x600p@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=hdmi,1024x768p@30'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=hdmi,1280x720p@30'"
DVI:	SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=dvi,640x480p@30'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=dvi,800x600p@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=dvi,1024x768p@30'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=dvi,1280x720p@30'"
RGB/Graphics:	** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=vga,640x480p@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=svga,800x600p@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=xga,1024x768p@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=wxga,1280x768p@30'"
Component:	** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=component,720x480i@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=component,720x480p@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=component,720x576i@30'" ** SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=component,720x576p@25'"
SVIDEO:	SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=svideo,ntsc'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=svideo,pal-bghid'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=svideo,pal-m'"
Composite:	SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=composite,ntsc'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=composite,pal-bghid'" SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=composite,pal-m'"
** available in firmware v2.1.100 and later.	

Code-Driven Buttons and Video Feeds

Example code is available from AMX to assist with developing individual solutions for producing dynamic buttons and/or video feeds. From either the MXA-MP or MXA-MPL product pages on **www.amx.com**, select the AMX Device Modules link on the right side of the page. This example code is open source and may be modified to function with any source capable of providing the specified resolution and signal type.

Programming

Overview

You can program Modero X Series touch panels, using the commands in this section, to perform a wide variety of operations using Send Commands and variable text commands. A device must first be defined in the NetLinx programming language with values for the Device: Port: System**.** In all programming examples - *Panel* is used in place of these values and represents all Modero panels).

Verify you are using the latest NetLinx Master and Modero G4 Series firmware, as well as the latest version of NetLinx Studio and TPDesign4.

Page Commands

Page Commands are case-insensitive.

Page Commands	

@APG	Add a specific popup page to a specified popup group if it does not already exist. If the new popup is added to a group which has a popup displayed on the current page along with the new pop-up, the displayed popup will be hidden and the new popup will be displayed.
	Syntax:
	`"'@APG-<popup page name>;<popup group name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@APG-Popup1;Group1'"`
	Adds the popup page 'Popup1' to the popup group 'Group1'.

@CPG	Clear all popup pages from specified popup group.
	Syntax:
	`"'@CPG-<popup group name>'"`
	Variables:
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@CPG-Group1'"`
	Clears all popup pages from the popup group 'Group1'.

@DPG	Delete a specific popup page from specified popup group if it exists.
	Syntax:
	`"'@DPG-<popup page name>;<popup group name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@DPG-Popup1;Group1'"`
	Deletes the popup page 'Popup1' from the popup group 'Group1'.

Page Commands (Cont.)	

@PDR	Set the popup location reset flag. If the flag is set, the popup will return to its default location on show instead of its last drag location.
	Syntax:
	`"'@PDR-<popup page name>;<reset flag>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	reset flag = 1 = Enable reset flag, 0 = Disable reset flag
	Example:
	`SEND_COMMAND Panel,"'@PDR-Popup1;1'"`
	Popup1 will return to its default location when turned On.

@PHE	Set the hide effect for the specified popup page to the named hide effect.
	Syntax:
	`"'@PHE-<popup page name>;<hide effect name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	hide effect name = Refers to the popup effect names being used.
	Example:
	`SEND_COMMAND Panel,"'@PHE-Popup1;Slide to Left'"`
	Sets the Popup1 hide effect name to 'Slide to Left'.

@PHP	Set the hide effect position.
	Only 1 coordinate is ever needed for an effect; however, the command will specify both. This command sets the location at which the effect will end at.
	Syntax:
	`"'@PHP-<popup page name>;<x coordinate>,<y coordinate>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PHP-Popup1;75,0'"`
	Sets the Popup1 hide effect x-coordinate value to 75 and the y-coordinate value to 0.

@PHT	Set the hide effect time for the specified popup page.
	Syntax:
	`"'@PHT-<popup page name>;<hide effect time>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	hide effect time = Given in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PHT-Popup1;50'"`
	Sets the Popup1 hide effect time to 5 seconds.

@PPA	Close all popups on a specified page. If the page name is empty, the current page is used. Same as the 'Clear Page' command in TPDesign4.
	Syntax:
	`"'@PPA-<page name>'"`
	Variable:
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPA-Page1'"`
	Close all pop-ups on Page1.

Page Commands (Cont.)	

@PPF	Deactivate a specific popup page on either a specified page or the current page. *If the page name is empty, the current page is used (see example 2). If the popup page is part of a group, the whole group is deactivated. This command works in the same way as the 'Hide Popup' command in TPDesign4.*
	Syntax:
	`"'@PPF-<popup page name>;<page name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Examples:
	`SEND_COMMAND Panel,"'@PPF-Popup1;Main'"`
	`SEND_COMMAND Panel,"'@PPF-Popup1'"`
	Deactivates the popup page 'Popup1' on the current page.

@PPG	Toggle a specific popup page on either a specified page or the current page. *If the page name is empty, the current page is used (see example 2). Toggling refers to the activating/deactivating (On/Off) of a popup page. This command works in the same way as the 'Toggle Popup' command in TPDesign4.*
	Syntax:
	`"'@PPG-<popup page name>;<page name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Examples:
	`SEND_COMMAND Panel,"'@PPG-Popup1;Main'"`
	Toggles the popup page 'Popup1' on the 'Main' page from one state to another (On/Off).
	`SEND_COMMAND Panel,"'@PPG-Popup1'"`
	Toggles the popup page 'Popup1' on the current page from one state to another (On/Off).

@PPK	Kill a specific popup page from all pages. Kill refers to the deactivating (Off) of a popup window from all pages. If the pop-up page is part of a group, the whole group is deactivated. This command works in the same way as the 'Clear Group' command in TPDesign4.
	Syntax:
	`"'@PPK-<popup page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	Example:
	`SEND_COMMAND Panel,"'@PPK-Popup1'"`
	Kills the popup page 'Popup1' on all pages.

@PPM	Set the modality of a specific popup page to Modal or NonModal. A Modal popup page, when active, only allows you to use the buttons and features on that popup page. All other buttons on the panel page are inactivated.
	Syntax:
	`"'@PPM-<popup page name>;<mode>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	mode = NONMODAL converts a previously Modal popup page to a NonModal.
	MODAL converts a previously NonModal popup page to Modal.
	modal = 1 and non-modal = 0
	Examples:
	`SEND_COMMAND Panel,"'@PPM-Popup1;Modal'"`
	Sets the popup page 'Popup1' to Modal.
	`SEND_COMMAND Panel,"'@PPM-Popup1;1'"`
	Sets the popup page 'Popup1' to Modal.

Page Commands (Cont.)	

@PPN	Activate a specific popup page to launch on either a specified page or the current page. *If the page name is empty, the current page is used (see example 2).* If the popup page is already on, do not re-draw it. This command works in the same way as the 'Show Popup' command in TPDesign4.
	Syntax:
	`"'@PPN-<popup page name>;<page name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Examples:
	`SEND_COMMAND Panel,"'@PPN-Popup1;Main'"`
	Activates 'Popup1' on the 'Main' page.
	`SEND_COMMAND Panel,"'@PPN-Popup1'"`
	Activates the popup page 'Popup1' on the current page.

@PPT	Set a specific popup page to timeout within a specified time. If timeout is empty, popup page will clear the timeout.
	Syntax:
	`"'@PPT-<popup page name>;<timeout>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	timeout = Timeout duration in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PPT-Popup1;30'"`
	Sets the popup page 'Popup1' to timeout within 3 seconds.

@PPX	Close all popups on all pages. This command works in the same way as the 'Clear All' command in TPDesign4.
	Syntax:
	`"'@PPX'"`
	Example:
	`SEND_COMMAND Panel,"'@PPX'"`
	Close all popups on all pages.

@PSE	Set the show effect for the specified popup page to the named show effect.
	Syntax:
	`"'@PSE-<popup page name>;<show effect name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	show effect name = Refers to the popup effect name being used.
	Example:
	`SEND_COMMAND Panel,"'@PSE-Popup1;Slide from Left'"`
	Sets the Popup1 show effect name to 'Slide from Left'.

@PSP	Set the show effect position. Only 1 coordinate is ever needed for an effect; however, the command will specify both. This command sets the location at which the effect will begin.
	Syntax:
	`"'@PSP-<popup page name>;<x coordinate>,<y coordinate>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PSP-Popup1;100,0'"`
	Sets the Popup1 show effect x-coordinate value to 100 and the y-coordinate value to 0.

Page Commands (Cont.)	

@PST	Set the show effect time for the specified popup page.
	Syntax:
	`"'@PST-<popup page name>;<show effect time>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	show effect time = Given in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PST-Popup1;50'"`
	Sets the Popup1 show effect time to 5 seconds.

PAGE	Flips to a page with a specified page name. If the page is currently active, it will not redraw the page.
	Syntax:
	`"'PAGE-<page name>'"`
	Variable:
	page name = 1 - 50 ASCII characters. Name of the page is displayed On. If left blank, the page flips back to the previous page.
	Examples:
	`SEND_COMMAND Panel,"'PAGE-Page1'"`
	Flips to page1.
	`SEND_COMMAND Panel,"'PAGE-'"`
	Flips to the previous page.

PPOF	Deactivate a specific popup page on either a specified page or the current page. *If the page name is empty, the current page is used (see example 2).* If the popup page is part of a group, the whole group is deactivated. This command works in the same way as the 'Hide Popup' command in TPDesign4.
	Syntax:
	`"'PPOF-<popup page name>;<page name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Examples:
	`SEND_COMMAND Panel,"'PPOF-Popup1;Main'"`
	Deactivates the popup page 'Popup1' on the Main page.
	`SEND_COMMAND Panel,"'PPOF-Popup1'"`
	Deactivates the popup page 'Popup1' on the current page.

PPOG	Toggle a specific popup page on either a specified page or the current page. *If the page name is empty, the current page is used (see example 2).* Toggling refers to the activating/deactivating (On/Off) of a popup page. This command works in the same way as the 'Toggle Popup' command in TPDesign4.
	Syntax:
	`"'PPOG-<popup page name>;<page name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Examples:
	`SEND_COMMAND Panel,"'PPOG-Popup1;Main'"`
	Toggles the popup page 'Popup1' on the Main page from one state to another (On/Off).
	`SEND_COMMAND Panel,"'PPOG-Popup1'"`
	Toggles the popup page 'Popup1' on the current page from one state to another (On/Off).

Page Commands (Cont.)	

PPON	Activate a specific popup page to launch on either a specified page or the current page.*If the page name is empty, the current page is used (see example 2). If the popup page is already On, do not re-draw it. This command works in the same way as the 'Show Popup' command in TPDesign4.*
	Syntax:
	`"'PPON-<popup page name>;<page name>'"`
	Variables:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Examples:
	`SEND_COMMAND Panel,"'PPON-Popup1; Main'"`
	Activates the popup page 'Popup1' on the Main page.
	`SEND_COMMAND Panel,"'PPON-Popup1'"`
	Activates the popup page 'Popup1' on the current page.

Programming Numbers

RGB Triplets and Names For Basic 88 Colors

RGB Values for all 88 Basic Colors

Index #	Name	R	G	B	Index #	Name	R	G	B
00	Very Light Red	255	0	0	48	Very Light Blue	0	0	255
01	Light Red	223	0	0	49	Light Blue	0	0	223
02	Red	191	0	0	50	Blue	0	0	191
03	Medium Red	159	0	0	51	Medium Blue	0	0	159
04	Dark Red	127	0	0	52	Dark Blue	0	0	127
05	Very Dark Red	95	0	0	53	Very Dark Blue	0	0	95
06	Very Light Orange	255	128	0	54	Very Light Purple	128	0	255
07	Light Orange	223	112	0	55	Light Purple	112	0	223
08	Orange	191	96	0	56	Purple	96	0	191
09	Medium Orange	159	80	0	57	Medium Purple	80	0	159
10	Dark Orange	127	64	0	58	Dark Purple	64	0	127
11	Very Dark Orange	95	48	0	59	Very Dark Purple	48	0	95
12	Very Light Yellow	255	255	0	60	Very Light Magenta	255	0	255
13	Light Yellow	223	223	0	61	Light Magenta	223	0	223
14	Yellow	191	191	0	62	Magenta	191	0	191
15	Medium Yellow	159	159	0	63	Medium Magenta	159	0	159
16	Dark Yellow	127	127	0	64	Dark Magenta	127	0	127
17	Very Dark Yellow	95	95	0	65	Very Dark Magenta	95	0	95
18	Very Light Lime	128	255	0	66	Very Light Pink	255	0	128
19	Light Lime	112	223	0	67	Light Pink	223	0	112
20	Lime	96	191	0	68	Pink	191	0	96
21	Medium Lime	80	159	0	69	Medium Pink	159	0	80
22	Dark Lime	64	127	0	70	Dark Pink	127	0	64
23	Very Dark Lime	48	95	0	66	Very Light Pink	255	0	128
24	Very Light Green	0	255	0	72	White	255	255	255
25	Light Green	0	223	0	73	Grey1	238	238	238
26	Green	0	191	0	74	Grey3	204	204	204
27	Medium Green	0	159	0	75	Grey5	170	170	170
28	Dark Green	0	127	0	76	Grey7	136	136	136
29	Very Dark Green	0	95	0	77	Grey9	102	102	102
30	Very Light Mint	0	255	128	78	Grey4	187	187	187
31	Light Mint	0	223	112	79	Grey6	153	153	153
32	Mint	0	191	96	80	Grey8	119	119	119
33	Medium Mint	0	159	80	81	Grey10	85	85	85
34	Dark Mint	0	127	64	82	Grey12	51	51	51
35	Very Dark Mint	0	95	48	83	Grey13	34	34	34
36	Very Light Cyan	0	255	255	84	Grey2	221	221	221
37	Light Cyan	0	223	223	85	Grey11	68	68	68
38	Cyan	0	191	191	86	Grey14	17	17	17
39	Medium Cyan	0	159	159	87	Black	0	0	0
40	Dark Cyan	0	127	127	255	TRANSPARENT	99	53	99
41	Very Dark Cyan	0	95	95					
42	Very Light Aqua	0	128	255					
43	Light Aqua	0	112	223					
44	Aqua	0	96	191					
45	Medium Aqua	0	80	159					
46	Dark Aqua	0	64	127					
47	Very Dark Aqua	0	48	95					

Font Styles And ID Numbers

The following chart shows the default font type and their respective ID numbers generated by TPDesign4.

Default Font Styles and ID Numbers

Font ID #	Font type	Size	Font ID #	Font type	Size
1	Courier New	9	19	Arial	9
2	Courier New	12	20	Arial	10
3	Courier New	18	21	Arial	12
4	Courier New	26	22	Arial	14
5	Courier New	32	23	Arial	16
6	Courier New	18	24	Arial	18
7	Courier New	26	25	Arial	20
8	Courier New	34	26	Arial	24
9	AMX Bold	14	27	Arial	36
10	AMX Bold	20	28	Arial Bold	10
11	AMX Bold	36	29	Arial Bold	8
			32 - Variable Fonts start at 32.		

NOTE

*Fonts must be imported into a TPDesign4 project file. The font ID numbers are assigned by TPDesign4. These values are also listed in the **Generate Programmer's Report**.*

Border Styles and Programming Numbers

Border styles can be used to program borders on buttons, sliders, and popup pages.

Border Styles and Programming Numbers

No.	Border styles	No.	Border styles
0-1	No border	10-11	Picture frame
2	Single line	12	Double line
3	Double line	20	Bevel-S
4	Quad line	21	Bevel-M
5-6	Circle 15	22-23	Circle 15
7	Single line	24-27	Neon inactive-S
8	Double line	40-41	Diamond 55
9	Quad line		

The TPDesign4 Touch Panel Design program has pre-set border styles that are user-selectable. The following number values cannot be used for programming purposes when changing border styles. TPD4 border styles may ONLY be changed by using the name.

TPDesign Border Styles by Name

No.	Border styles	No.	Border styles	No.	Border styles	No.	Border styles
1	None	45	Diamond 105	89	Menu Btm Rounded 105	133	Menu Rt Rounded 165
2	AMX Elite -L	46	Diamond 115	90	Menu Btm Rounded 115	134	Menu Rt Rounded 175
3	AMX Elite -M	47	Diamond 125	91	Menu Btm Rounded 125	135	Menu Rt Rounded 185
4	AMX Elite -S	48	Diamond 135	92	Menu Btm Rounded 135	136	Menu Rt Rounded 195
5	Bevel -L	49	Diamond 145	93	Menu Btm Rounded 145	137	Menu Lt Rounded 15
6	Bevel -M	50	Diamond 155	94	Menu Btm Rounded 155	138	Menu Lt Rounded 25
7	Bevel -S	51	Diamond 165	95	Menu Btm Rounded 165	139	Menu Lt Rounded 35
8	Circle 15	52	Diamond 175	96	Menu Btm Rounded 175	140	Menu Lt Rounded 45
9	Circle 25	53	Diamond 185	97	Menu Btm Rounded 185	141	Menu Lt Rounded 55
10	Circle 35	54	Diamond 195	98	Menu Btm Rounded 195	142	Menu Lt Rounded 65
11	Circle 45	55	Double Bevel -L	99	Menu Top Rounded 15	143	Menu Lt Rounded 75
12	Circle 55	56	Double Bevel -M	100	Menu Top Rounded 25	144	Menu Lt Rounded 85
13	Circle 65	57	Double Bevel -S	101	Menu Top Rounded 35	145	Menu Lt Rounded 95
14	Circle 75	58	Double Line	102	Menu Top Rounded 45	146	Menu Lt Rounded 105
15	Circle 85	59	Fuzzy	103	Menu Top Rounded 55	147	Menu Lt Rounded 115
16	Circle 95	60	Glow-L	104	Menu Top Rounded 65	148	Menu Lt Rounded 125
17	Circle 105	61	Glow-S	105	Menu Top Rounded 75	149	Menu Lt Rounded 135
18	Circle 115	62	Help Down	106	Menu Top Rounded 85	150	Menu Lt Rounded 145
19	Circle 125	63	Neon Active -L	107	Menu Top Rounded 95	151	Menu Lt Rounded 155
20	Circle 135	64	Neon Active -S	108	Menu Top Rounded 105	152	Menu Lt Rounded 165
21	Circle 145	65	Neon Inactive -L	109	Menu Top Rounded 115	153	Menu Lt Rounded 175
22	Circle 155	66	Neon Inactive -S	110	Menu Top Rounded 125	154	Menu Lt Rounded 185
23	Circle 165	67	Oval H 60x30	111	Menu Top Rounded 135	155	Menu Lt Rounded 195
24	Circle 175	68	Oval H 100x50	112	Menu Top Rounded 145		
25	Circle 185	69	Oval H 150x75	113	Menu Top Rounded 155		
26	Circle 195	70	Oval H 200x100	114	Menu Top Rounded 165		
27	Cursor Bottom	71	Oval V 30x60	115	Menu Top Rounded 175		
28	Cursor Bottom w/ hole	72	Oval V 50x100	116	Menu Top Rounded 185		
29	Cursor Top	73	Oval V 75x150	117	Menu Top Rounded 195		
30	Cursor Top w/ hole	74	Oval V 100x200	118	Menu Rt Rounded 15		
31	Cursor Left	75	Picture Frame	119	Menu Rt Rounded 25		
32	Cursor Left w/ hole	76	Quad Line	120	Menu Rt Rounded 35		
33	Cursor Right	77	Single Line	121	Menu Rt Rounded 45		
34	Cursor Right w/ hole	78	Windows Style Popup	122	Menu Rt Rounded 55		
35	Custom Frame	79	Windows Style Popup (status bar)	123	Menu Rt Rounded 65		
36	Diamond 15	80	Menu Btm Rounded 15	124	Menu Rt Rounded 75		
37	Diamond 25	81	Menu Btm Rounded 25	125	Menu Rt Rounded 85		
38	Diamond 35	82	Menu Btm Rounded 35	126	Menu Rt Rounded 95		
39	Diamond 45	83	Menu Btm Rounded 45	127	Menu Rt Rounded 105		
40	Diamond 55	84	Menu Btm Rounded 55	128	Menu Rt Rounded 115		
41	Diamond 65	85	Menu Btm Rounded 65	129	Menu Rt Rounded 125		
42	Diamond 75	86	Menu Btm Rounded 75	130	Menu Rt Rounded 135		
43	Diamond 85	87	Menu Btm Rounded 85	131	Menu Rt Rounded 145		
44	Diamond 95	88	Menu Btm Rounded 95	132	Menu Rt Rounded 155		

"^" Button Commands

All commands that begin with "^" have the capability of assigning a variable text address range and button state range. A device must first be defined in the NetLinx programming language with values for the Device: Port: System (in all programming examples - *Panel* is used in place of these values).

- **Variable text ranges** allow you to target 1 or more variable text channels in a single command.
- **Button State ranges** allow you to target 1 or more states of a variable text button with a single command.
- **"."** Character is used for the 'through' notation, also the "**&**" character is used for the 'And' notation.
- These commands are case-insensitive

"^" Button Commands	

^ANI	Run a button animation (in 1/10 second).
	Syntax:
	`"'^ANI-<vt addr range>,<start state>,<end state>,<time>'"`
	Variables:
	variable text address range = 1 - 4000.
	start state = Beginning of button state (0= current state).
	end state = End of button state.
	time = In 1/10 second intervals.
	Example:
	`SEND_COMMAND Panel,"'^ANI-500,1,25,100'"`
	Runs a button animation at text range 500 from state 1 to state 25 for 10 second.

^APF	Add page flip action to a button if it does not already exist.
	Syntax:
	`"'^APF-<vt addr range>,<page flip action>,<page name>'"`
	Variables:
	variable text address range = 1 - 4000.
	page flip action =
	Stan[dardPage] - Flip to standard page
	StanAni[mated] - Flip to standard page using an animated transition (3 extra parameters)
	Prev[iousPage] - Flip to previous page
	Show[Popup] - Show Popup page
	Hide[Popup] - Hide Popup page
	Togg[lePopup] - Toggle popup state
	ClearG[roup] - Clear popup page group from all pages
	ClearP[age] - Clear all popup pages from a page with the specified page name
	ClearA[ll] - Clear all popup pages from all pages
	page name = 1 - 50 ASCII characters.
	animation, along with available origin values =
	Fade Center: Center
	Slide: Top, Left, Right (default), Bottom
	SlideBounce: Top, Left, Right (default), Bottom
	cntrDrFade: Top, Left, Right (default), Bottom
	doorFade: Top, Left, Right (default), Bottom
	blkGlass: Left, Right (default)
	pgCurl: LL, UL, LR (default), UR
	zoomIn: Center
	zoomOut: Center
	implode: Center
	explode: Center
	spinIn: Center
	spinOut: Center
	waves: Center
	flipCard: Top, Left, Right (default), Bottom
	slats: Top, Left, Right (default), Bottom
	squish: Top, Left, Right (default), Bottom
	tumble: LL, UL, LR (default), UR
	wipe: Top, Left, Right (default), Bottom, LL, UL, LR,UR
	time = transition time in tenths of a second (from 3 to 30 with 15 being the default)
	Examples:
	`SEND COMMAND Panel,"'^APF-400,Stan,Main Page'"`
	Assigns a button to a standard page flip with page name 'Main Page'.
	`SEND COMMAND Panle,"'^APF-400,StanAni,Main Page,Slide,Left,10'"`

"^" Button Commands (Cont.)	

^BAT	Append non-unicode text.
	Syntax:
	`"'^BAT-<vt addr range>,<button states range>,<new text>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BAT-520,1,Enter City'"`
	Appends the text 'Enter City' to the button's OFF state.

^BAU	Append unicode text. Same format as ^UNI.
	Syntax:
	`"'^BAU-<vt addr range>,<button states range>,<unicode text>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	unicode text = 1 - 50 ASCII characters. Unicode characters must be entered in Hex format.
	Example:
	`SEND_COMMAND Panel,"'^BAU-520,1,00770062'"`
	Appends Unicode text '00770062' to the button's OFF state.

^BCB	Set the border color to the specified color. This applies *only if* the specified border color is not the same as the current color.
	***Note**: Color can be assigned by color name (without spaces), number or R,G,B value (RRGGBB or RRGGBBAA).*
	Syntax:
	`"'^BCB-<vt addr range>,<button states range>,<color value>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	color value = Refer to the RGB Values for all 88 Basic Colors table on page 61 for more information.
	Example:
	`SEND_COMMAND Panel,"'^BCB-500.504&510,1,12'"`
	Sets the Off state border color to 12 (Yellow). Colors can be set by Color Numbers, Color name, R,G,B, alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB).

"^" Button Commands (Cont.)	

^BCF	Set the fill color to the specified color. This applies *only* if the specified fill color is not the same as the current color.
	***Note**: Color can be assigned by color name (without spaces), number or R,G,B value (RRGGBB or RRGGBBAA).*
	Syntax:
	`"'^BCF-<vt addr range>,<button states range>,<color value>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	color value = Refer to the RGB Values for all 88 Basic Colors table on page 61.
	Examples:
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,12'"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,Yellow'"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,#F4EC0A63''"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,#F4EC0A'"`
	Sets the Off state fill color by color number. Colors can be set by Color Numbers, Color name, R,G,B, alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB).

^BCT	Set the text color to the specified color. This applies *only* if the specified text color is not the same as the current color.
	***Note**: Color can be assigned by color name (without spaces), number or R,G,B value (RRGGBB or RRGGBBAA).*
	Syntax:
	`"'^BCT-<vt addr range>,<button states range>,<color value>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	color value = Refer to the RGB Values for all 88 Basic Colors table on page 61.
	Example:
	`SEND_COMMAND Panel,"'^BCT-500.504&510,1,12'"`
	Sets the Off state border color to 12 (Yellow). Colors can be set by Color Numbers, Color name, R,G,B, alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB).

^BDO	Determines what order each layer of the button is drawn.
	Syntax:
	`"'^BDO-<vt addr range>,<button states range>,<1-5><1-5><1-5><1-5><1-5>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	layer assignments =
	Fill Layer = 1
	Image Layer = 2
	Icon Layer = 3
	Text Layer = 4
	Border Layer = 5
	***Note**: The layer assignments are from bottom to top. The default draw order is* **12345**.
	Examples:
	`SEND_COMMAND Panel,"'^BDO-530,1&2,51432'"`
	Sets the button's variable text 530 ON/OFF state draw order (from bottom to top) to Border, Fill, Text, Icon, and Image.
	`SEND_COMMAND Panel,"'^BDO-1,0,12345'"`
	Sets all states of a button back to its default drawing order.

"^" Button Commands (Cont.)	

^BFB	Set the feedback type of the button. *ONLY works on General-type buttons.*
	Syntax:
	`"'^BFB-<vt addr range>,<feedback type>'"`
	Variables:
	variable text address range = 1 - 4000.
	feedback type = (None, Channel, Invert, On (Always on), Momentary, and Blink).
	Example:
	`SEND_COMMAND Panel,"'^BFB-500,Momentary'"`
	Sets the Feedback type of the button to 'Momentary'.

^BIM	Set the input mask for the specified address.
	Syntax:
	`"'^BIM-<vt addr range>,<input mask>'"`
	Variables:
	variable text address range = 1 - 4000.
	input mask = Refer to the Text Area Input Masking table on page 124 for character types.
	Example:
	`SEND_COMMAND Panel,"'^BIM-500,AAAAAAAAAA'"`
	Sets the input mask to ten 'A' characters, that are required, to either a letter or digit (entry is required).

^BLN	Set the number of lines removed equally from the top and bottom of a composite video signal. The maximum number of lines to remove is 240. A value of 0 will display the incoming video signal unaffected. This command is used to scale non 4x3 video images into non 4x3 video buttons.
	Syntax:
	`"'^BLN-<vt addr range>,<button states range>,<number of lines>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	number of lines = 0 - 240.
	Example:
	`SEND_COMMAND Panel,"'^BLN-500,55'"`
	Equally removes 55 lines from the top and 55 lines from the bottom of the video button.

"^" Button Commands (Cont.)	

^BMC	Copy attributes of the source button to all the destination buttons. Note that the source is a single button state. Each state must be copied as a separate command. The <codes> section represents what attributes will be copied. All codes are 2 char pairs that can be separated by comma, space, percent or just ran together.
	Syntax:
	`"'^BMC-<vt addr range>,<button states range>,<source port>,<source address>,<source state>,<codes>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	• source port = 1 - 100.
	• source address = 1 - 4000.
	• source state = 1 - 256.
	codes:
	BM - Picture/Bitmap
	BR - Border
	CB - Border Color
	CF - Fill Color
	CT - Text Color
	EC - Text effect color
	EF - Text effect
	FT - Font
	IC - Icon
	JB - Bitmap alignment
	JI - Icon alignment
	JT - Text alignment
	LN - Lines of video removed
	OP - Opacity
	SO - Button Sound
	TX - Text
	VI - Video slot ID
	WW - Word wrap on/off
	Examples:
	`SEND_COMMAND Panel,"'^BMC-425,1,1,500,1,BR'"`
	`or`
	`SEND_COMMAND Panel,"'^BMC-425,1,1,500,1,%BR'"`
	Copies the OFF state border of button with a variable text address of 500 onto the OFF state border of button with a variable text address of 425.
	`SEND_COMMAND Panel,"'^BMC-150,1,1,315,1,%BR%FT%TX%BM%IC%CF%CT'"`
	Copies the OFF state border, font, Text, bitmap, icon, fill color and text color of the button with a variable text address of 315 onto the OFF state border, font, Text, bitmap, icon, fill color and text color of the button with a variable text address of 150.
	Note: *Use this command if you are using the panel's default color palette. For custom color palettes, use ^BMF instead.*

"^" Button Commands (Cont.)	
^BMF	Set any/all button parameters by sending embedded codes and data. Syntax: `"'^BMF-<vt addr range>,<button states range>,<data>'"` ***Note:*** *Many subcommands do not use button state information. Refer to the subcommand for details.* Variables: variable text address char array = 1 - 4000. button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state). level range = 1 - 600 (level value is 1 - 65535). Data: '%B<border style>' = Set the border style name. (No support for states.) ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%B',<border 0-27,40,41> = Set the border style number (No support for states.) '%CB<on border color>' = Set Border Color. '%CF<on fill color>' = Set Fill Color. '%CT<on text color>' = Set Text Color. '%DO<1-5><1-5><1-5><1-5><1-5> = Set the draw order. Listed from bottom to top. '%EC<text effect color>' = Set the text effect color. '%EF<text effect name>' = Set the text effect. ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%EN<1 or 0>' = Enable/disable a button. '%F'<font 1-8,10,11,20-29,32-xx> = Set the font. See the Default Font Styles and ID Numbers table on page 61. '%GC<bargraph slider color>' = Set the bargraph slider color/Joystick cursor color. '%GD<bargraph ramp down>' = Set the bargraph ramp down time in 1/10 second. '%GG<bargraph drag increment> = Set the bargraph drag increment. Refer to the ^GDI command on page 75 for more information. '%GH<bargraph hi>' = Set the bargraph upper limit. '%GI<bargraph invert>' = Set the bargraph invert/noninvert or joystick coordinate (0,1,2,3). '%GL<bargraph low>' = Set the bargraph lower limit. '%GN<bargraph slider name>' = Set the bargraph slider name/Joystick cursor name. ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%GU<bargraph ramp up>' = Set the bargraph ramp up time in intervals of 1/10 second. '%I',<icon 01-9900, 0-clear>' = Set the icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section). '%I<icon 01-9900, 0-clear>' = Set the icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section). '%J',<set text alignment 1-9> = As shown the following telephone keypad alignment chart: 0 1 2 3 4 5 6 7 8 9 Zero can be used for an absolute position '%JB<alignment of bitmap/picture 0-9>' = As shown the above telephone keypad alignment chart BUT the 0 (zero) is absolute and followed by **',<left>,<top>'** '%JI<alignment of icon 0-9>' = As shown the above telephone keypad alignment chart, **BUT** the 0 (zero) is absolute and followed by **',<left>,<top>'** '%JT<alignment of text 0-9>' = As shown the above telephone keypad alignment chart, **BUT** the 0 (zero) is absolute and followed by **',<left>,<top>'** *For some of these commands and values, refer to* the RGB Values for all 88 Basic Colors table on page 61.

"^" Button Commands (Cont.)	
^BMF (Cont.)	'%LN<0-240>' = Set the lines of video being removed. ^*BLN* section on page 66 for more information. '%MI<mask image>' = Set the mask image. Refer to the ^BMI command on page 69 for more information. ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%MK<input mask>' = Set the input mask of a text area. ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%ML<max length>' = Set the maximum length of a text area. '%OP<0-255>' = Set the button opacity to either Invisible (value=0) or Opaque (value=255). '%OP#<00-FF>' = Set the button opacity to either Invisible (value=00) or Opaque (value=FF). '%OT<feedback type>' = Set the Feedback (Output) Type to one of the following: None, Channel,Invert, ON (Always ON), Momentary, or Blink. ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%P<bitmap>' = Set the picture/bitmap filename (empty is clear). ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%R = Sets button location and also resizes the button. For more information, please refer to the ^*BSP* section on page 73. '%SF<1 or 0>' = Set the focus for text area button. (No support for states.) '%SM' = Submit a text for text area button. (No support for states.) '%SO<sound>' = Set the button sound. ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%SW<1 or 0>' = Show/hide a button. (No support for states.) '%T<text >' = Set the text using ASCII characters (empty is clear). ***Note:*** *This parameter should be always used in its own BMF command, and should not be combined with other BMF subcommands.* '%UN<Unicode text>' = Set the Unicode text. See the ^*UNI* section on page 81 for the text format. '%VI<video ON/OFF>' = Set the Video either ON (value=1) or OFF (value=0). '%VL<0-1>' = Log-On/Log-Off the computer control connection '%VN<network name>' = Set network connection name. '%VP<password>' = Set the network connection password. '%WW<1 or 0>' = Word wrap ON/OFF. Example: `SEND_COMMAND Panel,"'^BMF-500,1,%B10%CFRed%CB Blue %CTBlack%Ptest.png'"` Sets the button OFF state as well as the Border, Fill Color, Border Color, Text Color, and Bitmap. ***Note:*** *Use this command if you are using custom color palette for your panel. If you intend to use the default color palette, use ^BMC instead.*

^BMI	Set the button mask image. Mask image is used to crop a borderless button to a non-square shape. This is typically used with a bitmap.
	Syntax:
	`"'^BMI-<vt addr range>,<button states range>,<mask image>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	mask image = Graphic file used.
	Example:
	`SEND_COMMAND Panel,"'^BMI-530,1&2,newMac.png'"`
	Sets the button with variable text 530 ON/OFF state mask image to 'newmac.png'.

"^" Button Commands (Cont.)	

^BML	Set the maximum length of the text area button.
	If this value is set to zero (0), the text area has no max length. The maximum length available is 2000. This is only for a Text area input button and not for a Text area input masking button.
	Syntax:
	`"'^BML-<vt addr range>,<max length>'"`
	Variables:
	variable text address range = 1 - 4000.
	max length = 2000 (0=no max length).
	Example:
	`SEND_COMMAND Panel,"'^BML-500,20'"`
	Sets the maximum length of the text area input button to 20 characters.

^BMP	Assign a picture to those buttons with a defined address range.
	Syntax:
	`"'^BMP-<vt addr range>,<button states range>,<name of bitmap/picture>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	name of bitmap/picture = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BMP-500.504&510.515,1,bitmap.png'"`
	Sets the OFF state picture for the buttons with variable text ranges of 500-504 & 510-515.

^BNC	Clear current TakeNote annotations.
	Syntax:
	`"'^BNC-<vt addr range>,<command value>'"`
	Variables:
	variable text address range = 1 - 4000.
	command value = (0= clear, 1= clear all).
	Example:
	`SEND_COMMAND Panel,"'^BNC-973,0'"`
	Clears the annotation of the TakeNote button with variable text 973.

^BNN	Set the TakeNote network name for the specified Addresses.
	Syntax:
	`"'^BNN-<vt addr range>,<network name>'"`
	Variables:
	variable text address range = 1 - 4000.
	network name = Use a valid IP Address.
	Example:
	`SEND_COMMAND Panel,"'^BNN-973,192.168.169.99'"`
	Sets the TakeNote button network name to 192.168.169.99.

^BNT	Set the TakeNote network port for the specified Addresses.
	Syntax:
	`"'^BNT-<vt addr range>,<network port>'"`
	Variables:
	variable text address range = 1 - 4000.
	network port = 1 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^BNT-973,5000'"`
	Sets the TakeNote button network port to 5000.

"^" Button Commands (Cont.)	

^BOP	Set the button opacity. The button opacity can be specified as a decimal between 0 - 255, where zero (0) is invisible and 255 is opaque, or as a HEX code, as used in the color commands by preceding the HEX code with the # sign. In this case, #00 becomes invisible and #FF becomes opaque. If the opacity is set to zero (0), this does not make the button inactive, only invisible.
	Syntax:
	`"'^BOP-<vt addr range>,<button states range>,<button opacity>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	button opacity = 0 (invisible) - 255 (opaque).
	Examples:
	`SEND_COMMAND Panel,"'^BOP-500.504&510.515,1,200'"`
	`SEND_COMMAND Panel,"'^BOP-500.504&510.515,1,#C8'"`
	Both examples set the opacity of the buttons with the variable text range of 500-504 and 510-515 to 200.

^BOR	Set a border to a specific border style associated with a border value for those buttons with a defined address range.Sets the border by name (AMX Elite) to those buttons with the variable text range of 500-504 & 510-515.
	The border style is available through the TPDesign4 border-style drop-down list. Refer to theTPDesign Border Styles by Name table on page 62 for more information.
	Syntax:
	`"'^BOR-<vt addr range>,<border style name or border value>'"`
	Variables:
	variable text address range = 1 - 4000.
	border style name = Refer to the Border Styles and Programming Numbers table on page 62.
	border value = 0 - 41.
	Examples:
	`SEND_COMMAND Panel,"'^BOR-500.504&510.515,10'"`
	Sets the border by number (#10) to those buttons with the variable text range of 500-504 & 510-515.
	`SEND_COMMAND Panel,"'^BOR-500.504&510,AMX Elite -M'"`

^BOS	Set the button to display either a Video or Non-Video window.
	Syntax:
	`"'^BOS-<vt addr range>,<button states range>,<video state>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	video state = Video Off = 0 and Video On = 1.
	Example:
	`SEND_COMMAND Panel,"'^BOS-500,1,1'"`
	Sets the button to display video.

^BPP	Set or clear the protected page flip flag of a button. Sets the button to protected page flip flag 1 (sets it to password 1).
	Syntax:
	`"'^BPP-<vt addr range>,<protected page flip flag value>'"`
	Variables:
	variable text address range = 1 - 4000.
	protected page flip flag value range = 0 - 4 (0 clears the flag).
	Example:
	`SEND_COMMAND Panel,"'^BPP-500,1'"`

"^" Button Commands (Cont.)	

^BRD	Set the border of a button state/states. *Only* if the specified border is not the same as the current border. The border names are available through the TPDesign4 border-name drop-down list. Refer to theTPDesign Border Styles by Name table on page 62.
	Syntax:
	`"'^BRD-<vt addr range>,<button states range>,<border name>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	border name = Refer to the Border Styles and Programming Numbers table on page 62.
	Example:
	`SEND_COMMAND Panel,"'^BRD-500.504&510.515,1&2,Quad Line'"`
	Sets the border by name (Quad Line) to those buttons with the variable text range of 500-504 & 510-515.

^BSF	Set the focus to the text area.
	***Note**: Select one button at a time (single variable text address). Do not assign a variable text address range to set focus to multiple buttons. Only one variable text address can be in focus at a time.*
	Syntax:
	`"'^BSF-<vt addr range>,<selection value>'"`
	Variables:
	variable text address range = 1 - 4000.
	selection value = Unselect = 0 and select = 1.
	Example:
	`SEND_COMMAND Panel,"'^BSF-500,1'"`
	Sets the focus to the text area of the button.

^BSM	Submit text for text area buttons. This command causes the text areas to send their text as strings to the NetLinx Master.
	Syntax:
	`"'^BSM-<vt addr range>'"`
	Variable:
	variable text address range = 1 - 4000.
	Example:
	`SEND_COMMAND Panel,"'^BSM-500'"`
	Submits the text of the text area button.

^BSO	Set the sound played when a button is pressed. If the sound name is blank, the sound is then cleared. If the sound name is not matched, the button sound is not changed.
	Syntax:
	`"'^BSO-<vt addr range>,<button states range>,<sound name>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	sound name = (**blank** - sound cleared, **not matched** - button sound not changed).
	Example:
	`SEND_COMMAND Panel,"'^BSO-500,1&2,music.wav'"`
	Assigns the sound 'music.wav' to the button Off/On states.

"^" Button Commands (Cont.)	

^BSP	Set the button size and its position on the page.
	Syntax:
	`"'^BSP-<vt addr range>,<left>,<top>,<right>,<bottom>'"`
	Variables:
	variable text address range = 1 - 4000.
	left = position of left edge of the button on the panel
	top = position of the top edge of the button on the panel
	right = position of right edge of the button on the panel
	bottom = position of the bottom edge of the button on the panel
	Example:
	`SEND_COMMAND panel,"'^BSP-530,20,100,50,130'"`
	Makes the button with variable text address 530 appear at (20,100) and be 30px by 30px

^BVL	Log-On/Log-Off the computer control connection.
	Syntax:
	`"'^BVL-<vt addr range>,<connection>'"`
	Variables:
	variable text address range = 1 - 4000.
	connection = 0 (Log-Off connection) and 1 (Log-On connection).
	Example:
	`SEND_COMMAND Panel,"'^BVL-500,0'"`
	Logs-off the computer control connection of the button.

^BVN	Set the computer control remote host for the specified address.
	Syntax:
	`"'^BVN-<vt addr range>,<remote host>'"`
	Variables:
	variable text address range = 1 - 4000.
	remote host = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BVN-500,191.191.191.191'"`
	Sets the remote host to '191.191.191.191' for the specific computer control button.

^BVP	Set the network password for the specified address.
	Syntax:
	`"'^BVP-<vt addr range>,<network password>'"`
	Variables:
	variable text address range = 1 - 4000.
	network password = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BVP-500,PCLOCK'"`
	Sets the password to PCLOCK for the specific PC control button.

^BVT	Set the computer control network port for the specified address.
	Syntax:
	`"'^BVT-<vt addr range>,<network port>'"`
	Variables:
	variable text address range = 1 - 4000.
	network port = 1 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^BVT-500,5000'"`
	Sets the network port to 5000.

"^" Button Commands (Cont.)	

^BWW	Set the button word wrap feature to those buttons with a defined address range. By default, word-wrap is Off.
	Syntax:
	`"'^BWW-<vt addr range>,<button states range>,<word wrap>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	word wrap = (0=Off and 1=On). Default is Off.
	Example:
	`SEND_COMMAND Panel,"'^BWW-500,1,1'"`
	Sets the word wrap on for the button's Off state.

^CPF	Clear all page flips from a button.
	Syntax:
	`"'^CPF-<vt addr range>'"`
	Variable:
	variable text address range = 1 - 4000.
	Example:
	`SEND_COMMAND Panel,"'^CPF-500'"`
	Clears all page flips from the button.

^DPF	Delete page flips from button if it already exists.
	Syntax:
	`"'^DFP-<vt addr range>,<actions>,<page name>'"`
	Variables:
	variable text address range = 1 - 4000.
	actions =
	Stan[dardPage] - Flip to standard page
	Prev[iousPage] - Flip to previous page
	Show[Popup] - Show Popup page
	Hide[Popup] - Hide Popup page
	Togg[lePopup] - Toggle popup state
	ClearG[roup] - Clear popup page group from all pages
	ClearP[age] - Clear all popup pages from a page with the specified page name
	ClearA[ll] - Clear all popup pages from all pages
	page name = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^DPF-409,Prev'"`
	Deletes the assignment of a button from flipping to a previous page.

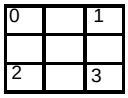
^DVS	Delete Video Snapshot. Deletes any stored video snapshot associated with the button(s) with the given address(es) and state(s). When sent, the affected button(s) will display a black screen in the video button until the button becomes active and video starts again. Syntax: `^DVS-<addr range>,<state range>`

^ENA	Enable or disable buttons with a set variable text range.
	Syntax:
	`"'^ENA-<vt addr range>,<command value>'"`
	Variables:
	variable text address range = 1 - 4000.
	command value = (0= disable, 1= enable)
	Example:
	`SEND_COMMAND Panel,"'^ENA-500.504&510.515,0'"`
	Disables button pushes on buttons with variable text range 500-504 & 510-515.

"^" Button Commands (Cont.)	

^FON	Set a font to a specific Font ID value for those buttons with a defined address range. Font ID numbers are generated by the TPDesign4 programmers report.
	Syntax:
	`"'^FON-<vt addr range>,<button states range>,<font value>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	font value = range = 1 - XXX. Refer to the *Default Font Styles and ID Numbers* section on page 61.
	Example:
	`SEND_COMMAND Panel,"'^FON-500.504&510.515,1&2,4'"`
	Sets the font size to font ID #4 for the On and Off states of buttons with the variable text range of 500-504 & 510-515.
	***Note**: The Font ID is generated by TPD4 and is located in TPD4 through the Main menu. Panel > Generate Programmer's Report >Text Only Format >Readme.txt.*

^GDI	Change the bargraph drag increment.
	Syntax:
	`"'^GDI-<vt addr range>,<bargraph drag increment>'"`
	Variables:
	variable text address range = 1 - 4000.
	bargraph drag increment = The default drag increment is 256.
	Example:
	`SEND_COMMAND Panel,"'^GDI-7,128'"`
	Sets the bargraph with variable text 7 to a drag increment of 128.

^GIV	Invert the joystick axis to move the origin to another corner. Parameters 1,2, and 3 will cause a bargraph or slider to be inverted regardless of orientation. Their effect will be as described for joysticks.
	Syntax:
	`"'^GIV-<vt addr range>,<joystick axis to invert>'"`
	Variables:
	variable text address range = 1 - 4000.
	joystick axis to invert = 0 - 3.
	 
	
	0 = Normal
	1 = Invert horizontal axis
	2 = Invert vertical axis
	3 = Invert both axis locations
	For a bargraph 1 = Invert, 0 = Non Invert
	Example:
	`SEND_COMMAND Panel,"'^GIV-500,3'"`
	Inverts the joystick axis origin to the bottom right corner.

^GLH	Change the bargraph upper limit.
	Syntax:
	`"'^GLH-<vt addr range>,<bargraph hi>'"`
	Variables:
	variable text address range = 1 - 4000.
	bargraph limit range = 1 - 65535 (*bargraph upper limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLH-500,1000'"`
	Changes the bargraph upper limit to 1000.

"^" Button Commands (Cont.)	

^GLL	Change the bargraph lower limit.
	Syntax:
	`"'^GLL-<vt addr range>,<bargraph low>'"`
	Variables:
	variable text address range = 1 - 4000.
	bargraph limit range = 1 - 65535 (*bargraph lower limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLL-500,150'"`
	Changes the bargraph lower limit to 150.

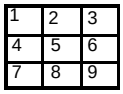
^GRD	Change the bargraph ramp-down time in 1/10th of a second.
	Syntax:
	`"'^GRD-<vt addr range>,<bargraph ramp down time>'"`
	Variables:
	variable text address range = 1 - 4000.
	bargraph ramp down time = In 1/10th of a second intervals.
	Example:
	`SEND_COMMAND Panel,"'^GRD-500,200'"`
	Changes the bargraph ramp down time to 20 seconds.

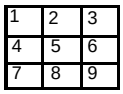
^GRU	Change the bargraph ramp-up time in 1/10th of a second.
	Syntax:
	`"'^GRU-<vt addr range>,<bargraph ramp up time>'"`
	Variables:
	variable text address range = 1 - 4000.
	bargraph ramp up time = In 1/10th of a second intervals.
	Example:
	`SEND_COMMAND Panel,"'^GRU-500,100'"`
	Changes the bargraph ramp up time to 10 seconds.

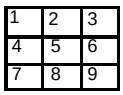
^GSC	Change the bargraph slider color or joystick cursor color. A user can also assign the color by Name and R,G,B value (RRGGBB or RRGGBBAA).
	Syntax:
	`"'^GSC-<vt addr range>,<color value>'"`
	Variables:
	variable text address range = 1 - 4000.
	color value = Refer to the RGB Values for all 88 Basic Colors table on page 61.
	Example:
	`SEND_COMMAND Panel,"'^GSC-500,12'"`
	Changes the bargraph or joystick slider color to Yellow.

<table>
<tr><th colspan="2">"^" Button Commands (Cont.)</th></tr>
<tr><td>^GSN</td><td>Change the bargraph slider name or joystick cursor name. Slider names and cursor names can be found in the TPDesign4 slider name and cursor drop-down list.
Syntax:
<code>"'^GSN-<vt addr range>,<bargraph slider name>'"</code>
Variables:
variable text address range = 1 - 4000.
bargraph slider name = See table below.
<table>
<tr><td colspan="3">Bargraph Slider Names:</td></tr>
<tr><td>None</td><td>Ball</td><td>Circle -L</td></tr>
<tr><td>Circle -M</td><td>Circle -S</td><td>Precision</td></tr>
<tr><td>Rectangle -L</td><td>Rectangle -M</td><td>Rectangle -S</td></tr>
<tr><td>Windows</td><td>Windows Active</td><td></td></tr>
<tr><td colspan="3">Joystick Cursor Names:</td></tr>
<tr><td>None</td><td>Arrow</td><td>Ball</td></tr>
<tr><td>Circle</td><td>Crosshairs</td><td>Gunsight</td></tr>
<tr><td>Hand</td><td>Metal</td><td>Spiral</td></tr>
<tr><td>Target</td><td>View Finder</td><td></td></tr>
</table>
Example:
<code>SEND_COMMAND Panel,"'^GSN-500,Ball'"</code>
Changes the bargraph slider name or the Joystick cursor name to 'Ball'.</td></tr>
<tr><td>^ICO</td><td>Set the icon to a button.
Syntax:
<code>"'^ICO-<vt addr range>,<button states range>,<icon index>'"</code>
Variables:
variable text address range = 1 - 4000.
button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
icon index range = 0 - 9900 (a value of 0 is clear).
Example:
<code>SEND_COMMAND Panel,"'^ICO-500.504&510.515,1&2,1'"</code>
Sets the icon for On and Off states for buttons with variable text ranges of 500-504 & 510-515.</td></tr>
<tr><td>^IRM</td><td>Pulse the given IR channel for onTime in tenths of seconds. Delay offTime in tenths of a second before the next IR pulse is allowed. ^IRM allows the command itself to specify the port number. ^IRM is needed because commands programmed on the panel itself can only be sent to a single port number. (currently this is defined as 1 only).
Note: The port number of the IR will be the port number assigned in TPD4.
Syntax:
<code>"'^IRM-<port>,<channel>,<onTime>,<offTime>'"</code>
Variables:
port = User-defined port on the device (panel).
channel = 1 - 255 (channel to pulse).
onTime = 1/10th of a second.
offTime = 1/10th of a second.
Example:
<code>SEND_COMMAND Panel,"'^IRM-10,5, 20, 10'"</code>
Sets the port 10 IR channel 5 on time to 1 second and off time to 2 seconds.</td></tr>
</table>

"^" Button Commands (Cont.)	

^JSB	Set bitmap/picture alignment using a numeric keypad layout for those buttons with a defined address range.
	The alignment of 0 is followed by ',<left>,<top>'. The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JSB-<vt addr range>,<button states range>,<new text alignment>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	new text alignment = Value of 1- 9 corresponds to the following locations:
	0
	 
	Zero can be used for an absolute position
	Example:
	`SEND_COMMAND Panel,"'^JSB-500.504&510.515,1&2,1'"`
	Sets the off/on state picture alignment to upper left corner for those buttons with variable text ranges of 500-504 & 510-515.

^JSI	Set icon alignment using a numeric keypad layout for those buttons with a defined address range.
	The alignment of 0 is followed by ',<left>,<top>'. The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JSI-<vt addr range>,<button states range>,<new icon alignment>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	new icon alignment = Value of 1 - 9 corresponds to the following locations:
	0
	 
	Zero can be used for an absolute position
	Example:
	`SEND_COMMAND Panel,"'^JSI-500.504&510.515,1&2,1'"`
	Sets the Off/On state icon alignment to upper left corner for those buttons with variable text range of 500-504 & 510-515.

^JST	Set text alignment using a numeric keypad layout for those buttons with a defined address range.
	The alignment of 0 is followed by ',<left>,<top>'. The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JST-<vt addr range>,<button states range>,<new text alignment>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	new text alignment = Value of 1 - 9 corresponds to the following locations:
	0
	 
	Zero can be used for an absolute position
	Example:
	`SEND_COMMAND Panel,"'^JST-500.504&510.515,1&2,1'"`
	Sets the text alignment to the upper left corner for those buttons with variable text ranges of 500-504 & 510-515.

"^" Button Commands (Cont.)	

^MBT	Set the Mouse Button mode On for the virtual PC.
	Syntax:
	`"'^MBT-<pass data>'"`
	Variable:
	pass data:
	0 = None
	1 = Left
	2 = Right
	3 = Middle
	Example:
	`SEND COMMAND Panel,"'^MBT-1'"`
	Sets the mouse button mode to 'Left Mouse Click'.

^MDC	Turn On the 'Mouse double-click' feature for the virtual PC.
	Syntax:
	`"'^MDC'"`
	Example:
	`SEND COMMAND Panel,"'^MDC'"`
	Sets the mouse double-click for use with the virtual PC.

^PIC	Start/stop Picture View. Syntax: `^PIC-<0,1,2,3,4>` 0: Stop Running Picture View 1: Start Picture View in Preview Mode 2: Enable Picture View Startup on USB insert 3: Disable Picture View Startup on USB insert 4: Start Picture View in Normal Mode
^STF	Scale To Fit - specify that a dynamic image on the button(s) with the given address(es) and state(s) should be scaled to fit (if 1 specified) or not scaled to fit (if 0 specified) Syntax: `^STF-<addr range>,<state range>,<0:disable|1:enable>` ***Note:*** *this option can also be used in the ^BMF command as embedded code: %SC[0|1]*

^SHO	Show or hide a button with a set variable text range.
	Syntax:
	`"'^SHO-<vt addr range>,<command value>'"`
	Variables:
	variable text address range = 1 - 4000.
	command value = (0= hide, 1= show).
	Example:
	`SEND_COMMAND Panel,"'^SHO-500.504&510.515,0'"`
	Hides buttons with variable text address range 500-504 & 510-515.

^SKT	Receive touch information on specified socket.
	Syntax:
	`"'^SKT-<socket>'"`
	Variables:
	socket = <0=disable socket, greater than 1023=enable socket on specified port>
	Only socket values equal to or greater than 1024 are valid. The panel will open up a TCP listening socket on the port specified. User or 3rd party program can connect to the panel using this port/ socket number and receive touch/release/move strings.
	By default, the panel disables touch notifications on startup.
	Example:
	`SEND_COMMAND Panel, '^SKT-7425' (enables touch notifications on socket 7425)`
	`SEND_COMMAND Panel, '^SKT-0' (disables touch notification)"`

"^" Button Commands (Cont.)	

^TEC	Set the text effect color for the specified addresses/states to the specified color. The Text Effect is specified by name and can be found in TPD4. You can also assign the color by name or RGB value (RRGGBB or RRGGBBAA).
	Syntax:
	`"'^TEC-<vt addr range>,<button states range>,<color value>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	color value = Refer to the RGB Values for all 88 Basic Colors table on page 61.
	Example:
	`SEND_COMMAND Panel,"'^TEC-500.504&510.515,1&2,12'"`
	Sets the text effect color to Very Light Yellow on buttons with variable text 500-504 and 510-515.

^TEF	Set the text effect. The Text Effect is specified by name and can be found in TPD4.
	Syntax:
	`"'^TEF-<vt addr range>,<button states range>,<text effect name>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	text effect name = Refer to the Text Effects table on page 81 for a listing of text effect names.
	Example:
	`SEND_COMMAND Panel,"'^TEF-500.504&510.515,1&2,Soft Drop Shadow 3'"`
	Sets the text effect to Soft Drop Shadow 3 for the button with variable text range 500-504 and 510-515.

^TOP	Enables/disables touch output to Master. If enabled, Press/Move/Release events are sent to the Master as string events.
	Syntax:
	`"'^TOP-<state>'"`
	Variables:
	<state> = 0(disable), 1(presses/releases), 2(moves), 3(press/move/release)
	Note: *Move should be used with caution. This setting can generate a significant amount of traffic to the master depending on user interaction.*
	Example:
	`"'^TOP-1'"`
	Example Response:
	`"String Event: Text: Press,320,480"`
	Example Response:
	`"String Event: Text: Release,320,480"`

^TXT	Assigns a Non-Unicode text string to those buttons with a defined address range..
	Syntax:
	`"'^TXT-<vt addr range>,<button states range>,<new text>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^TXT-500.504&510.515,1&2,Test Only'"`
	Sets the On and Off state text for buttons with the variable text ranges of 500-504 & 510-515.

"^" Button Commands (Cont.)	

^UNI	Set Unicode text. For the ^UNI command (%UN and ^BMF command), the Unicode text is sent as ASCII-HEX nibbles.
	Syntax:
	`"'^UNI-<vt addr range>,<button states range>,<unicode text>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	unicode text = Unicode HEX value.
	Example:
	`SEND_COMMAND Panel,"'^UNI-500,1,0041'"`
	Sets the button's unicode character to 'A'.
	Note: *To send the variable text 'A' in unicode to all states of the variable text button 1, (for which the character code is 0041 Hex), send the following command:*
	`SEND_COMMAND TP,"'^UNI-1,0,0041'"`
	Note*: Unicode is always represented in a HEX value. TPD4 generates (through the Text Enter Box dialog) unicode HEX values. Refer to the TPDesign4 Instruction Manual for more information.*

Text Effects Names

The following is a listing of text effects names associated with the **^TEF** command on page 80.

Text Effects		
• Glow -S	• Medium Drop Shadow 1	• Hard Drop Shadow 1
• Glow -M	• Medium Drop Shadow 2	• Hard Drop Shadow 2
• Glow -L	• Medium Drop Shadow 3	• Hard Drop Shadow 3
• Glow -X	• Medium Drop Shadow 4	• Hard Drop Shadow 4
• Outline -S	• Medium Drop Shadow 5	• Hard Drop Shadow 5
• Outline -M	• Medium Drop Shadow 6	• Hard Drop Shadow 6
• Outline -L	• Medium Drop Shadow 7	• Hard Drop Shadow 7
• Outline -X	• Medium Drop Shadow 8	• Hard Drop Shadow 8
• Soft Drop Shadow 1	• Medium Drop Shadow 1 with outline	• Hard Drop Shadow 1 with outline
• Soft Drop Shadow 2	• Medium Drop Shadow 2 with outline	• Hard Drop Shadow 2 with outline
• Soft Drop Shadow 3	• Medium Drop Shadow 3 with outline	• Hard Drop Shadow 3 with outline
• Soft Drop Shadow 4	• Medium Drop Shadow 4 with outline	• Hard Drop Shadow 4 with outline
• Soft Drop Shadow 5	• Medium Drop Shadow 5 with outline	• Hard Drop Shadow 5 with outline
• Soft Drop Shadow 6	• Medium Drop Shadow 6 with outline	• Hard Drop Shadow 6 with outline
• Soft Drop Shadow 7	• Medium Drop Shadow 7 with outline	• Hard Drop Shadow 7 with outline
• Soft Drop Shadow 8	• Medium Drop Shadow 8 with outline	• Hard Drop Shadow 8 with outline
• Soft Drop Shadow 1 with outline		
• Soft Drop Shadow 2 with outline		
• Soft Drop Shadow 3 with outline		
• Soft Drop Shadow 4 with outline		
• Soft Drop Shadow 5 with outline		
• Soft Drop Shadow 6 with outline		
• Soft Drop Shadow 7 with outline		
• Soft Drop Shadow 8 with outline		

Button Query Commands

Button Query commands reply back with a custom event. There will be one custom event for each button/state combination. Each query is assigned a unique custom event type.

The following example is for debug purposes only:

```
NetLinx Example: CUSTOM_EVENT[device, Address, Custom event type]
DEFINE_EVENT
   CUSTOM_EVENT[TP,529,1001]      // Text
   CUSTOM_EVENT[TP,529,1002]      // Bitmap
   CUSTOM_EVENT[TP,529,1003]      // Icon
   CUSTOM_EVENT[TP,529,1004]      // Text Justification
   CUSTOM_EVENT[TP,529,1005]      // Bitmap Justification
   CUSTOM_EVENT[TP,529,1006]      // Icon Justification
   CUSTOM_EVENT[TP,529,1007]      // Font
   CUSTOM_EVENT[TP,529,1008]      // Text Effect Name
   CUSTOM_EVENT[TP,529,1009]      // Text Effect Color
   CUSTOM_EVENT[TP,529,1010]      // Word Wrap
   CUSTOM_EVENT[TP,529,1011]      // ON state Border Color
   CUSTOM_EVENT[TP,529,1012]      // ON state Fill Color
   CUSTOM_EVENT[TP,529,1013]      // ON state Text Color
   CUSTOM_EVENT[TP,529,1014]      // Border Name
   CUSTOM_EVENT[TP,529,1015]      // Opacity
{
   SEND_STRING Id=',ITOA(CUSTOM.ID),' Type=',ITOA(CUSTOM.TYPE)"
   SEND_STRING 0,"'Flag   =',ITOA(CUSTOM.FLAG)"
   SEND_STRING 0,"'VALUE1 =',ITOA(CUSTOM.VALUE1)"
   SEND_STRING 0,"'VALUE2 =',ITOA(CUSTOM.VALUE2)"
   SEND_STRING 0,"'VALUE3 =',ITOA(CUSTOM.VALUE3)"
   SEND_STRING 0,"'TEXT   =',CUSTOM.TEXT"
   SEND_STRING 0,"'TEXT LENGTH =',ITOA(LENGTH_STRING(CUSTOM.TEXT))"
}
```

All custom events have the following 7 fields:

Custom Event Fields	
Field	**Description**
Uint Flag	0 means text is a standard string, 1 means Unicode encoded string
slong value1	button state number
slong value2	actual length of string (this is not encoded size)
slong value3	index of first character (usually 1 or same as optional index
string text	the text from the button
text length (string encode)	button text length

These fields are populated differently for each query command. The text length (String Encode) field is not used in any command.

Button Query Commands	

?BCB	Get the current border color.
	Syntax:
	`"'?BCB-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1011:**
	Flag - zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCB-529,1'"`
	Gets the button 'OFF state' border color. information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1011`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #222222FF`
	`TEXT LENGTH = 9`

?BCF	Get the current fill color.
	Syntax:
	`"'?BCF-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1012:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCF-529,1'"`
	Gets the button 'OFF state' fill color information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1012`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #FF8000FF`
	`TEXT LENGTH = 9`

Button Query Commands (Cont.)	

?BCT	Get the current text color.
	Syntax:
	`"'?BCT-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1013:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCT-529,1'"`
	Gets the button 'OFF state' text color information.
	The result sent to Master would be:
	`ButtonGet Id = 529 Type = 1013`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #FFFFFEFF`
	`TEXT LENGTH = 9`

?BMP	Get the current bitmap name.
	Syntax:
	`"'?BMP-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1002:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Zero
	Text - String that represents the bitmap name
	Text length - Bitmap name text length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BMP-529,1'"`
	Gets the button 'OFF state' bitmap information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1002`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = Buggs.png`
	`TEXT LENGTH = 9`

Button Query Commands (Cont.)	

?BOP	Get the overall button opacity.
	Syntax:
	`"'?BOP-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1015:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Opacity
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?BOP-529,1'"`
	Gets the button 'OFF state' opacity information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1015`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 200`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?BRD	Get the current border name.
	Syntax:
	`"'?BRD-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1014:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Zero
	Text - String that represents border name
	Text length - Border name length
	Example:
	`SEND COMMAND Panel,"'?BRD-529,1'"`
	Gets the button 'OFF state' border information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1014`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 22`
	`VALUE3 = 0`
	`TEXT = Double Bevel Raised -L`
	`TEXT LENGTH = 22`

Button Query Commands (Cont.)	

?BWW	Get the current word wrap flag status.
	Syntax:
	`"'?BWW-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1010:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 0 = no word wrap, 1 = word wrap
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?BWW-529,1'"`
	Gets the button 'OFF state' word wrap flag status information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1010`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 1`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?FON	Get the current font index.
	Syntax:
	`"'?FON-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1007:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Font index
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?FON-529,1'"`
	Gets the button 'OFF state' font type index information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1007`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 72`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?ICO	Get the current icon index.
	Syntax:
	`"'?ICO-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1003:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Icon Index
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?ICO-529,1&2'"`
	Gets the button 'OFF state' icon index information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1003`
	`Flag = 0`
	`VALUE1 = 2`
	`VALUE2 = 12`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?JSB	Get the current bitmap justification.
	Syntax:
	`"'?JSB-<vt addr range>,<button states range>'"`
	Variables
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1005:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 1 - 9 justify
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JSB-529,1'"`
	Gets the button 'OFF state' bitmap justification information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1005`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 5`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?JSI	Get the current icon justification.
	Syntax:
	`"'?JSI-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1006:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 1 - 9 justify
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JSI-529,1'"`
	Gets the button 'OFF state' icon justification information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1006`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 6`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

?JST	Get the current text justification.
	Syntax:
	`"'?JST-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1004:**
	Flag - Zero
	Value1 - Button state number
	Value2 - 1 - 9 justify
	Value3 - Zero
	Text - Blank
	Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JST-529,1'"`
	Gets the button 'OFF state' text justification information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1004`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 1`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?TEC	Get the current text effect color.
	Syntax:
	`"'?TEC-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1009:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string (should be 9)
	Value3 - Zero
	Text - Hex encoded color value (ex: #000000FF)
	Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?TEC-529,1'"`
	Gets the button 'OFF state' text effect color information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1009`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #5088F2AE`
	`TEXT LENGTH = 9`

?TEF	Get the current text effect name.
	Syntax:
	`"'?TEF-<vt addr range>,<button states range>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	custom event type **1008:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Zero
	Text - String that represents the text effect name
	Text length - Text effect name length
	Example:
	`SEND COMMAND Panel,"'?TEF-529,1'"`
	Gets the button 'OFF state' text effect name information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1008`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 18`
	`VALUE3 = 0`
	`TEXT = Hard Drop Shadow 3`
	`TEXT LENGTH = 18`

Button Query Commands (Cont.)	

?TXT	Get the current text information.
	Syntax:
	`"'?TXT-<vt addr range>,<button states range>,<optional index>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	optional index = This is used if a string was too long to get back in one command. The reply will start at this index.
	custom event type **1001:**
	Flag - Zero
	Value1 - Button state number
	Value2 - Actual length of string
	Value3 - Index
	Text - Text from the button
	Text length - Button text length
	Example:
	`SEND COMMAND Panel,"'?TXT-529,1'"`
	Gets the button 'OFF state' text information.
	The result sent to the Master would be:
	`ButtonGet Id = 529 Type = 1001`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 14`
	`VALUE3 = 1`
	`TEXT = This is a test`
	`TEXT LENGTH = 14`

Panel Runtime Operations

Serial Commands are used in Terminal Emulator mode. These commands are case insensitive.

Panel Runtime Operation Commands	

ABEEP	Output a single beep even if BEEP is Off.
	Syntax:
	`"'ABEEP'"`
	Example:
	`SEND COMMAND Panel,"'ABEEP'"`
	Outputs a single beep even if BEEP is Off.

ADBEEP	Output a double beep even if BEEP is Off.
	Syntax:
	`"'ADBEEP'"`
	Example:
	`SEND COMMAND Panel,"'ADBEEP'"`
	Outputs a double beep even if Beep is Off.

@AKB	Pop up the keyboard icon and initialize the text string to that specified. Keyboard string is set to null on power up and is stored until power is lost. The Prompt Text is optional.
	Syntax:
	`"'@AKB-<initial text>;<prompt text>'"`
	Variables:
	initial font = 1 - 50 ASCII characters.
	prompt font = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@AKB-Texas;Enter State'"`
	Pops up the Keyboard and initializes the text string '*Texas*' with prompt text '*Enter State*'.

Panel Runtime Operation Commands (Cont.)	

AKEYB	Pop up the keyboard icon and initialize the text string to that specified. Keyboard string is set to null on power up and is stored until power is lost.
	Syntax:
	`"'AKEYB-<initial text>'"`
	Variables:
	initial text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'AKEYB-This is a Test'"`
	Pops up the Keyboard and initializes the text string 'This is a Test'.

AKEYP	Pop up the keypad icon and initialize the text string to that specified. The keypad string is set to null on power up and is stored until power is lost.
	Syntax:
	`"'AKEYP-<number string>'"`
	Variables:
	`number string = 0 - 9999.`
	Example:
	`SEND COMMAND Panel,"'AKEP-12345'"`
	Pops up the Keypad and initializes the text string '12345'.

AKEYR	Remove keyboard or keypad that was displayed using 'AKEYB', 'AKEYP', 'PKEYP', @AKB, @AKP, @PKP, @EKP, or @TKP commands.
	Syntax:
	`"'AKEYR'"`
	Example:
	`SEND COMMAND Panel,"'AKEYR'"`
	Removes the Keyboard/Keypad.

@AKP	Pop up the keypad icon and initialize the text string to that specified. Keypad string is set to null on power up and is stored until power is lost. The Prompt Text is optional.
	Syntax:
	`"'@AKP-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@AKP-12345678;ENTER PASSWORD'"`
	Pops up the Keypad and initializes the text string '12345678' with prompt text 'ENTER PASSWORD'.

@AKR	Remove keyboard or keypad that was displayed using 'AKEYB', 'AKEYP', 'PKEYP', @AKB, @AKP, @PKP, @EKP, or @TKP commands.
	Syntax:
	`"'@AKR'"`
	Example:
	`SEND COMMAND Panel,"'@AKR'"`
	Removes the Keyboard/Keypad.

BEEP	Output a beep.
	Syntax:
	`"'BEEP'"`
	Example:
	`SEND COMMAND Panel,"'BEEP'"`
	Outputs a beep.

Panel Runtime Operation Commands (Cont.)	

BRIT	Set the panel brightness.
	Syntax:
	`"'BRIT-<brightness level>'"`
	Variable:
	brightness level = 0 - 100.
	Example:
	`SEND COMMAND Panel,"'BRIT-50'"`
	Sets the brightness level to 50.

@BRT	Set the panel brightness.
	Syntax:
	`"'@BRT-<brightness level>'"`
	Variable:
	brightness level = 0 - 100.
	Example:
	`SEND COMMAND Panel,"'@BRT-70'"`
	Sets the brightness level to 70.

DBEEP	Output a double beep.
	Syntax:
	`"'DBEEP'"`
	Example:
	`SEND COMMAND Panel,"'DBEEP'"`
	Outputs a double beep.

@EKP	Extend the Keypad.Pops up the keypad icon and initializes the text string to that specified. The Prompt Text is optional.
	Syntax:
	`"'@EKP-<initial text>;<prompt text>'"`
	Variables:
	initial text = 1 - 50 ASCII characters.
	prompt text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@EKP-33333333;Enter Password'"`
	Pops up the Keypad and initializes the text string '33333333' with prompt text 'Enter Password'.

PKEYP	Present a private keypad. Pops up the keypad icon and initializes the text string to that specified. Keypad displays a '*' instead of the numbers typed. The Prompt Text is optional.
	Syntax:
	`"'PKEYP-<initial text>'"`
	Variable:
	initial text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'PKEYP-123456789'"`
	Pops up the Keypad and initializes the text string '123456789' in '*'.

@PKP	Present a private keypad. Pops up the keypad icon and initializes the text string to that specified. Keypad displays a '*' instead of the numbers typed. The Prompt Text is optional.
	Syntax:
	`"'@PKP-<initial text>;<prompt text>'"`
	Variables:
	initial text = 1 - 50 ASCII characters.
	prompt text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@PKP-1234567;ENTER PASSWORD'"`
	Pops up the Keypad and initializes the text string 'ENTER PASSWORD' in '*'.

Panel Runtime Operation Commands (Cont.)	

SETUP	Send panel to SETUP page.
	Syntax:
	`"'SETUP'"`
	Example:
	`SEND COMMAND Panel,"'SETUP'"`
	Sends the panel to the Setup Page.

SHUTDOWN	Shut down the batteries providing power to the panel.
	Syntax:
	`"'SHUTDOWN'"`
	Example:
	`SEND COMMAND Panel,"'SHUTDOWN'"`
	Shuts-down the batteries feeding power to the panel. This function saves the battery from discharging.

SLEEP	Force the panel into screen saver mode.
	Syntax:
	`"'SLEEP'"`
	Example:
	`SEND COMMAND Panel,"'SLEEP'"`
	Forces the panel into screen saver mode.

@SOU	Play a sound file.
	Syntax:
	`"'@SOU-<sound name>'"`
	Variable:
	sound name = Name of the sound file. Supported sound file formats are: WAV & MP3.
	Example:
	`SEND COMMAND Panel,"'@SOU-Music.wav'"`
	Plays the 'Music.wav' file.

@TKP	Present a telephone keypad. Pops up the keypad icon and initializes the text string to that specified. The Prompt Text is optional.
	Syntax:
	`"'@TKP-<initial text>;<prompt text>'"`
	Variables:
	initial text = 1 - 50 ASCII characters.
	prompt text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@TKP-999.222.1211;Enter Phone Number'"`
	Pops-up the Keypad and initializes the text string '999.222.1211' with prompt text 'Enter Phone Number'.

TPAGEON	Turn On page tracking. This command turns On page tracking, whereby when the page or popups change, a string is sent to the Master. This string may be captured with a CREATE_BUFFER command for one panel and sent directly to another panel.
	Syntax:
	`"'TPAGEON'"`
	Example:
	`SEND COMMAND Panel,"'TPAGEON'"`
	Turns On page tracking.

TPAGEOFF	Turn Off page tracking.
	Syntax:
	`"'TPAGEOFF'"`
	Example:
	`SEND COMMAND Panel,"'TPAGEOFF'"`
	Turns Off page tracking.

Panel Runtime Operation Commands (Cont.)	

@VKB	Popup the virtual keyboard.
	Syntax:
	`"'@VKB'"`
	Example:
	`SEND COMMAND Panel,"'@VKB'"`
	Pops-up the virtual keyboard.

WAKE	Force the panel out of screen saver mode.
	Syntax:
	`"'WAKE'"`
	Example:
	`SEND COMMAND Panel,"'WAKE'"`
	Forces the panel out of the screen saver mode.

Panel Setup Commands

These commands are case-insensitive.

Panel Setup Commands	

@PWD	Set the page flip password. @PWD sets the level 1 password only.
	Syntax:
	`"'@PWD-<page flip password>'"`
	Variable:
	page flip password = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@PWD-Main'"`
	Sets the page flip password to 'Main'.

^PWD	Set the page flip password. Password level is required and must be 1 - 4.
	Syntax:
	`"'^PWD-<password level>,<page flip password>'"`
	Variables:
	password level = 1 - 4.
	page flip password = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^PWD-1,Main'"`
	Sets the page flip password on Password Level 1 to 'Main'.

Input Commands

These Send Commands are case-insensitive.

Input Commands	

^KPS	Set the keyboard passthru.
	Syntax:
	`"'^KPS-<pass data>'"`
	Variables:
	pass data:
	<blank/empty> = Disables the keyboard.
	0 = Pass data to G4 application (default). This can be used with VPC or text areas.
	1 - 4 = Not used.
	5 = Sends out data to the Master.
	Examples:
	`SEND COMMAND Panel,"'^KPS-5'"`
	Sets the keyboard passthru to the Master. Option 5 sends keystrokes directly to the Master via the Send Output String mechanism. This process sends a virtual keystroke command (^VKS) to the Master.
	`SEND COMMAND Panel,"'^KPS-0'"`
	Disables the keyboard passthru to the Master.
	Accepts keystrokes from attached USB keyboard or Virtual keyboard.

^VKS	Send one or more virtual key strokes to the G4 application.Key presses and key releases are not distinguished except in the case of CTRL, ALT, and SHIFT.
	Refer to theEmbedded Codes table on page 95 that define special characters which can be included with the string but may not be represented by the ASCII character set.
	Syntax:
	`"'^VKS-<string>'"`
	Variable:
	string = Only 1 string per command/only one stroke per command.
	Example:
	`SEND COMMAND Panel,"'^VKS-'8"`
	Sends out the keystroke 'backspace' to the G4 application.

Embedded Codes

The following is a list of G4 compatible embedded codes:

Embedded Codes					
Decimal #	**Hex value**	**Virtual keystroke**	**Decimal #**	**Hex value**	**Virtual keystroke**
8	($08)	Backspace	149	($95)	Page Up
13	($0D)	Enter	150	($96)	Page Down
27	($1B)	ESC	151	($97)	Scroll Lock
128	($80)	CTRL key down	152	($98)	Pause
129	($81)	ALT key down	153	($99)	Break
130	($82)	Shift key down	154	($9A)	Print Screen
131	($83)	F1	155	($9B)	SYSRQ
132	($84)	F2	156	($9C)	Tab
133	($85)	F3	157	($9D)	Windows
134	($86)	F4	158	($9E)	Menu
135	($87)	F5	159	($9F)	Up Arrow
136	($88)	F6	160	($A0)	Down Arrow
137	($89)	F7	161	($A1)	Left Arrow
138	($8A)	F8	162	($A2)	Right Arrow
139	($8B)	F9	192	($C0)	CTRL key up
140	($8C)	F10	193	($C1)	ALT key up
141	($8D)	F11	194	($C2)	Shift key up
142	($8E)	F12			
143	($8F)	Num Lock			
144	($90)	Caps Lock			
145	($91)	Insert			
146	($92)	Delete			
147	($93)	Home			
148	($94)	End			

Dynamic Image Commands

The following table describes Dynamic Image Commands.

Dynamic Image Commands	

^BBR	Set the bitmap of a button to use a particular resource.
	Syntax:
	`"'^BBR-<vt addr range>,<button states range>,<resource name>'"`
	Variables:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons, 1 = Off state and 2 = On state).
	resource name = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BBR-700,1,Sports_Image'"`
	Sets the resource name of the button to 'Sports_Image'.

^RAF	Adds any and all resource parameters by sending embedded codes and data. Since the embedded codes are preceded by a '%' character, any '%' character contained in the URL must be escaped with a second '%' character (see example). The file name field (indicated by a **%F** embedded code) may contain special escape sequences as shown in the *^RAF, ^RMF - Embedded Codes* table below.
	Syntax:
	`"'^RAF-<resource name>,<data>'"`
	Variables:
	resource name = 1 - 50 ASCII characters.
	data = Refers to the embedded codes, see the *^RAF, ^RMF - Embedded Codes* section on page 98.
	Example:
	`SEND_COMMAND Panel,"'^RAF-New Image,%P0%HAMX.COM%ALab/Test%%5Ffile%Ftest.jpg'"`
	Adds a new resource.
	•The resource name is 'New Image'
	•%P (protocol) is an HTTP
	•%H (host name) is ***AMX.COM***
	•%A (file path) is ***Lab/Test_file***
	•%F (file name) is ***test.jpg***.
	Note that the **%%5F** in the file path is actually encoded as **%5F**.

^RFR	Force a refresh for a given resource, if the resource is visible onscreen. If it is not onscreen, it will be deferred until it is visible to do the refresh.
	Syntax:
	`"'^RFR-<resource name>,<notification option>'"`
	This command has an optional notification option at the end of the command with the following possible values:
	• *on* - notifications are sent whenever the named dynamic image resource is loaded/refreshed.
	• *off* - notifications are not sent (default).
	• *once* - notifications are sent one time whenever the named dynamic image resource is loaded/refreshed. Notifications are not sent on subsequent loads/refreshes.
	Examples:
	`SEND_COMMAND Panel, '^RFR-Sports_Image,on'`
	Force a refresh on 'Sport_Image' when the resource is visible onscreen and enable completion notifications.
	`SEND_COMMAND Panel, '^RFR-Sports_Image,off'`
	Force a refresh on 'Sport_Image' when the resource is visible onscreen and disable completion notifications.
	`SEND_COMMAND Panel, '^RFR-Sports_Image,once'`
	Force a refresh on 'Sport_Image' when the resource is visible onscreen and enable a one-time completion notification.

Dynamic Image Commands (Cont.)	

^RFRP	Force a refresh of the given resource, pre-fetching the resource. The command will "prefetch" the resource even if it is not currently visible.
	Syntax:
	`"'^RFRP-<resource name>, <notification option>'"`
	This command has new optional notification option at the end of the command with the following possible values:
	• *on* - notifications are sent whenever the named dynamic image resource is loaded/refreshed.
	• *off* - notifications are not sent (default).
	• *once* - notifications are sent one time whenever the named dynamic image resource is loaded/refreshed. Notifications are not sent on subsequent loads/refreshes.
	Examples:
	`SEND_COMMAND Panel, '^RFRP-Sports_Image,on'`
	Force a refresh on 'Sport_Image' immediately and enable completion notifications.
	`SEND_COMMAND Panel, '^RFRP-Sports_Image,off'`
	Force a refresh on 'Sport_Image' immediately and disable completion notifications.
	`SEND_COMMAND Panel, '^RFRP-Sports_Image,once'`
	Force a refresh on 'Sport_Image' immediately and enable a one-time completion notification.

^RMF	Modifies any and all resource parameters by sending embedded codes and data.
	Since the embedded codes are preceded by a '%' character, any '%' character contained in the URL must be escaped with a second '%' character (see example).
	The file name field (indicated by a **%F** embedded code) may contain special escape sequences as shown in the *^RAF, ^RMF - Embedded Codes* section on page 98.
	Syntax:
	`"'^RMF-<resource name>,<data>'"`
	Variables:
	• resource name = 1 - 50 ASCII characters
	• data = Refers to the embedded codes, see the *^RAF, ^RMF - Embedded Codes* section on page 98.
	Example:
	`SEND_COMMAND Panel,"'^RMF-Sports_Image,%ALab%%5FTest/Images%Ftest.jpg'"`
	Changes the resource 'Sports_Image' file name to 'test.jpg' and the path to 'Lab_Test/Images'.
	Note that the **%%5F** in the file path is actually encoded as **%5F**.

^RSR	Change the refresh rate for a given resource.
	Syntax:
	`"'^RSR-<resource name>,<refresh rate>'"`
	Variables:
	resource name = 1 - 50 ASCII characters.
	refresh rate = Measured in seconds.
	Example:
	`SEND_COMMAND Panel,"'^RSR-Sports_Image,5'"`
	Sets the refresh rate to 5 seconds for the given resource ('Sports_Image').

^RAF, ^RMF - Embedded Codes

The ^RAF and ^RMF commands add and modify any and all resource parameters by sending embedded codes and data:

```
"'^RAF-<resource name>,<data>'"
"'^RMF-<resource name>,<data>'"
```

The <data> variable uses the embedded codes described in the following table:

^RAF, ^RMF - Embedded Codes

Parameter	Embedded Code	Description
protocol	'%P <0-1>'	Set protocol: either HTTP (0) or FTP (1)
user	'%U <user>'	Set Username for authentication
password	'%S <password>'	Set Password for authentication.
host	'%H <host>'	Set Host Name (fully qualified DNS or IP address).
path	'%A <path>'	Set directory path. The path must be a valid HTTP URL minus the protocol, host, and filename. The only exception to this is the inclusion of special escape sequences and in the case of the FTP protocol, regular expressions.
file	'%F <file>'	The file or program that will return the resource. The file must be a valid HTTP URL minus the protocol, host, and path. The only exception to this is the inclusion of special escape sequences and in the case of the FTP protocol, regular expressions.
refresh	'%R <refresh 1-65535>'	The number of seconds between refreshes in which the resource is downloaded again. Refreshing a resource causes the button displaying that resource to refresh also. The default value is 0, which means to only download the resource once for each time it comes into view (or if preserve is set, only once period). ***Note:*** *For Motion JPEGs, the Refresh interval should always be 0.*
newest	'%N <0-1>'	Set the newest file. A value of 1 means that only the most recent file matching the pattern is downloaded. ***Note:*** *The 'newest file' option only applies to FTP Dynamic Images, and only those that have pattern matching as part of their filename. Neither 'newest file' nor pattern matching apply to HTTP Dynamic Images. When set, the panel will first pull a list of files matching the given pattern from the specified FTP server and path. The timestamps of the items in the list will be compared, with the newest one being displayed on the panel. This is useful for source devices that place a uniquely named still image in a folder at constant intervals, allowing the panel always to display the most recent one.*
preserve	'%V <0-1>'	Set the value of the preserve flag. A value of 0 (the default) means the resource should be reloaded each time it comes into view. A value of 1 means the resource should be preserved in cache after the first time it is loaded, and not reloaded each time it comes into view. This value is ignored if the Refresh interval is greater than 0.
dynamo	'%D'	Enable/disable Fast Dynamo. Panel will attempt to accelerate this resource in hardware.
Notification setting	'%C<on,off,once>'	Indicates whether a notification is required when a Dynamic Image is loaded/refreshed. The string following the %C can be: 1. *on* - notifications are sent whenever the named dynamic image resource is loaded/refreshed. 2. *off* - notifications are not sent (default). 3. *once* - notifications are sent one time whenever the named dynamic image resource is loaded/refreshed. Notifications are not sent on subsequent loads/refreshes. If the %C code is not sent as part of a ^RAF command, the notifications are set to off. If the %C code is not sent as part of a ^RMF command, the notifications are not changed from the current setting.

Escape Sequences

The ^RAF and ^RMF commands support the replacement of any special escape sequences in the filename (specified by the **%F** embedded code) with the corresponding data obtained from the system as outlined in the table below:

Escape Sequences

Sequence	Panel Information	Sequence	Panel Information
$DV	Device Number	**$AC**	Address code
$SY	System Number	**$AP**	Address port
$IP	IP Address	**$CC**	Channel code
$HN	Host Name	**$CP**	Channel port
$MC	Mac Address	**$LC**	Level code
$ID	Neuron ID (*Only supported on panels that use ICSNet; ignored on all other panels*)	**$LP**	Level port
$PX	X resolution of current panel mode/file	**$BX**	X Resolution of Current button
$PY	Y resolution of current panel mode/file	**$BY**	Y Resolution of Current button
$ST	Current state	**$BN**	Name of Button

For instance, **http://www.amx.com/img.asp?device=$DV**

would become

http://www.amx.com/img.asp?device=10001.

Intercom Commands

Intercom commands only apply to Modero X/S Series G4 panels equipped with a microphone (excluding all "No Comm" panels).

Intercom Commands	

^MODEL?	Sets model name. If the panel supports intercom hardware it will respond with its model name as shown in the response below. Older hardware or newer hardware that has intercom support disabled with not respond to this command.
	Syntax:
	`SEND_COMMAND <DEV>,"'^MODEL?'"`
	Variables: None.
	Example:
	`SEND_COMMAND TP1,"'^MODEL?'"`
	Panel response string if intercom enabled:
	`^MODEL-MXT-1000`

^ICS-	Starts a call to the specified IP address and ports, where initial mode is either 1 (talk) or 0 (listen) or 2 (both). If no mode is specified 0 (listen) is assumed.
	Note: *no data packets will actually flow until the intercom modify command is sent to the panel.*
	Syntax:
	`"'^ICS-<IP>,<TX UDP port>,<RX UDP port>,<initial mode>'"`
	Variables:
	IP = IP Address of panel to connect with on an Intercom call.
	TX UDP port = UDP port to transmit to.
	RX UDP port = UDP port to receive from.
	initial mode = 0 (listen) or 1 (talk) or 2 (handsfree). 0 is the default.
	Example of setting up a handsfree unicast call between two panels:
	`SEND_COMMAND TP1, "^ICS-192.168.0.3,9000,9002,2"`
	`SEND_COMMAND TP2, "^ICS-192.168.0.4,9002,9000,2"`
	Example of setting up a multicast call where the first panel is paging two other panels:
	`SEND_COMMAND TP1, "^ICS-239.252.1.1,9002,9000,1"`
	`SEND_COMMAND TP2, "^ICS-239.252.1.1,9002,9000,0"`
	`SEND_COMMAND TP3, "^ICS-239.252.1.1,9002,9000,0"`
	Example of setting up a baby monitor call where the first panel is listening to the microphone audio coming from the second panel:
	`SEND_COMMAND TP1, "^ICS-192.168.0.3,9000,9002,0"`
	`SEND_COMMAND TP2, "^ICS-192.168.0.4,9002,9000,1"`
	Note: *When integrating the intercom functionality between AMX devices and non-AMX devices, please note that the RX UDP port should be used by the non-AMX device to receive audio.*

^ICE'	This terminates an intercom call/connection.
	Syntax:
	`"'^ICE'"`
	Example:
	`SEND_COMMAND TP1,"'^ICE'"`
	`SEND_COMMAND TP2,"'^ICE'"`
	Terminates an intercom call between two panels.

^ICM-LISTEN	Intercom modify command.
	Syntax:
	`"'^ICM-LISTEN'"`
	Example:
	`SEND_COMMAND TP1,"'^ICM-TALK'"`

Intercom Commands (Cont.)	

^ICM-MICLEVEL	Sets the microphone level during an intercom call (0 to 100).
	Syntax:
	`"^ICM-MICLEVEL"`
	Variables:
	Level = 0-100
	Example:
	`SEND_COMMAND TP1, "^ICM-MICLEVEL,40"`
	Sets the microphone level to 40.

^ICM-MUTEMIC	Sets the state of the microphone on a panel to muted (1) or unmuted (0). At the start of each call, the microphone starts out unmuted.
	Syntax:
	`SEND_COMMAND <DEV>, "^ICM-MICLEVEL,<value>"`
	Example:
	`SEND_COMMAND TP1, "^ICM-MUTEMIC,1"`

^ICM-SPEAKERLEVEL	Sets the speaker level during an intercom call (0 to 100).
	Syntax:
	`SEND_COMMAND <DEV>, "^ICM-SPEAKERLEVEL,<value>"`
	Variables:
	Level = 0-100.
	Example:
	`SEND_COMMAND TP1, "^ICM-SPEAKERLEVEL,55"`

^ICM-TALK	Intercom modify command.
	Syntax:
	`"'^ICM-TALK'"`
	Example:
	`SEND_COMMAND TP1,"'^ICM-TALK'"`

^IIC	Intercom incoming call. Syntax: `“’^IIC’` Notifies the panel (specifically the AMX BT Handset accessory) that an intercom call is coming in. This is to enable the accessory to ring.
^IOC	Intercom outgoing call. Syntax: `“’^IOC’` Notifies the panel that an intercom call is outgoing. This is to enable any headset accessories for the appropriate operation.

SIP Commands

The following table lists and describes SIP commands that are generated from the touch panel. SIP commands only apply to Modero X/S Series G4 panels equipped with SIP functionality (excluding all "No Comm" panels).

SIP Commands	

^PHN-AUTOANSWER	Provides the state of the auto-answer feature.
	Syntax:
	`"'^PHN-AUTOANSWER, <state>'"`
	Variable:
	state = 0 or 1 (off or on)
	Example:
	`SEND_COMMAND Panel,"'^PHN-AUTOANSWER, 1'"`

^PHN-CALL	Provides call progress notification for a call.
	Syntax:
	`"'^PHN-CALL, <status>, <connection id>'"`
	Variables:
	status = CONNECTED, DISCONNECTED, TRYING, RINGING, or HOLD.
	connection id = The identifying number of the connection.
	Example:
	`SEND_COMMAND Panel"'^PHN-CALL, CONNECTED, 1'"`
	Notifies that the call is connected.

^PHN-DECLINE	Decline (send to voice mail if configured) the incoming call on <CallID> as indicated from the previous PHN-INCOMING message. CallID should be 0 or 1.
	Syntax:
	`"'^PHN-DECLINE, <CallID>'"`
	Variable:
	CallID = The identifying number of the connection.
	Example:
	`SEND_COMMAND Panel,"'^PHN-DECLINE,0""`

^PHN-INCOMING	Provides incoming call notification and the connection ID used for all future commands related to this call. The connection id will be 0 or 1.
	Syntax:
	`"'^PHN-INCOMING, <caller number>, <caller name>, <connection id>, <timestamp>, '"`
	Variables:
	caller number = The phone number of the incoming call.
	caller name = The name associated with the caller number.
	connection id = The identifying number of the connection.
	timestamp = The current time in MM/DD/YY HH:MM:SS format.
	Example:
	`SEND_COMMAND Panel,"'^PHN-INCOMING, 2125551000, AMX, 07/22/08 12:00:00, 1'"`

^PHN-LINESTATE	Indicates the current state of each of the available connections used to manage calls.
	Syntax:
	`"'^PHN-LINESTATE, <connection id>, <state>, <connection id>, <state>,...'"`
	Variables:
	connection id = The identifying number of the connection.
	state = IDLE, HOLD, or CONNECTED
	extn = The local extension of this panel (see Example)
	Example:
	`SEND_COMMAND Panel,"'^PHN-LINESTATE, 1, IDLE, 2, CONNECTED, SIP, <extn>'"`

SIP Commands (Cont.)	

^PHN-MSGWAITING	Indicates the number of messages waiting the user's voice mail box.
	Syntax:
	`"'^PHN-MSGWAITING, <messages>, <new message count>, <old message count>, <new urgent message count>, <old urgent message count>'"`
	Variables:
	messages = 0 or 1 (1 indicates new messages)
	new message count = The number of new messages.
	old message count = The number of old messages.
	new urgent message count = The number of new messages marked urgent.
	old urgent message count = The number of old messages marked urgent.
	Example:
	`SEND_COMMAND Panel,"'^PHN-MSGWAITING, 1, 1, 2, 1, 0'"`

^PHN-PRIVACY	Indicates the state of the privacy feature.
	Syntax:
	`"'^PHN-PRIVACY, <state>'"`
	Variables:
	state = 0 (Disable) or 1 (Enable)
	new message count = The number of new messages.
	old message count = The number of old messages.
	new urgent message count = The number of new messages marked urgent.
	old urgent message count = The number of old messages marked urgent.
	Example:
	`SEND_COMMAND Panel,"'^PHN-PRIVACY, 0'"`

^PHN-REDIAL	Indicates the panel is redialing the number.
	Syntax:
	`"'^PHN-REDIAL, <number>'"`
	Variable:
	number = The phone number to dial.
	Example:
	`SEND_COMMAND Panel,"'^PHN-REDIAL, 2125551000'"`

^PHN-TRANSFERRED	Indicates a call has been transferred.
	Syntax:
	`"'^PHN-TRANSFERRED'"`
	Example:
	`SEND_COMMAND Panel,"'^PHN-TRANSFERRED'"`

SIP Call Management Commands

The following table lists and describes SIP commands that are sent to the touch panel to manage calls. SIP commands only apply to Modero X/S Series G4 panels equipped with SIP functionality (excluding all "No Comm" panels). .

SIP Call Management Commands	

^PHN-ANSWER	Answers the call.
	Syntax:
	`"'^PHN-ANSWER, <connection id>'"`
	Variable:
	connection id = The identifying number of the connection
	Example:
	`SEND_COMMAND Panel,"'^PHN-ANSWER, 1'"`

^PHN-AUTOANSWER	Enables (1) or disables (0) the auto-answer feature on the phone.
	Syntax:
	`"'^PHN-AUTOANSWER, <state>'"`
	Variable:
	state = 0 (Disable) or 1 (Enable)
	Example:
	`SEND_COMMAND Panel,"'^PHN-AUTOANSWER, 1'"`
	Enables the auto-answer feature.

?PHN-AUTOANSWER	Queries the state of the auto- answer feature. The panel responds with the ^PHN-AUTOANSWER, <state> message.
	Syntax:
	`"'?PHN-AUTOANSWER'"`
	Example:
	`SEND_COMMAND Panel,"'?PHN-AUTOANSWER'"`

^PHN-CALL	Calls the provided number.
	Syntax:
	`"'^PHN-CALL, <number>'"`
	Variable:
	number = The provided phone number
	Example:
	`SEND_COMMAND Panel,"'^PHN-CALL, 2125551000'"`

^PHN-DTMF	Sends DTMF codes.
	Syntax:
	`"'^PHN-DTMF, <DTMF code>'"`
	Variable:
	DTMF code = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, POUND, or ASTERISK.
	Example:
	`SEND_COMMAND Panel,"'^PHN-DTMF, 1234567879ASTERISK'"`

^PHN-HANGUP	Hangs up the call.
	Syntax:
	`"'^PHN-HANGUP, <connection id>'"`
	Variable:
	connection id = The identifying number of the connection
	Example:
	`SEND_COMMAND Panel,"'^PHN-HANGUP, 1'"`

^PHN-HOLD	Places the call on hold.
	Syntax:
	`"'^PHN-HOLD, <connection id>'"`
	Variable:
	connection id = The identifying number of the connection
	Example:
	`SEND_COMMAND Panel,"'^PHN-HOLD, 1'"`

SIP Call Management Commands (Cont.)	

?PHN-LINESTATE	Queries the state of each of the connections used by the SIP device.
	The panel responds with the ^PHN-LINESTATE message.
	Syntax:
	`"'?PHN-LINESTATE'"`
	Example:
	`SEND_COMMAND Panel,"'?PHN-LINESTATE'"`

^PHN-PRIVACY	Enables or disables the privacy feature on the phone (do not disturb).
	Syntax:
	`"'^PHN-PRIVACY, <state>'"`
	Variable:
	state = 0 (Disable) or 1 (Enable)
	Example:
	`SEND_COMMAND Panel,"'^PHN-PRIVACY, 1'"`
	Enables the privacy feature.

?PHN-PRIVACY	Queries the state of the privacy feature.
	The panel responds with the ^PHN-PRIVACY, <state> message.
	Syntax:
	`"'?PHN-PRIVACY'"`
	Example:
	`SEND_COMMAND Panel,"'?PHN-PRIVACY'"`

^PHN-REDIAL	Redials the last number.
	Syntax:
	`"'^PHN-REDIAL'"`
	Example:
	`SEND_COMMAND Panel,"'^PHN-REDIAL'"`

^PHN-TRANSFER	Transfers the call to the provided number.
	Syntax:
	`"'^PHN-TRANSFER, <connection id>, <number>'"`
	Variables:
	connection id = The identifying number of the connection
	number = The number to which you want to transfer the call.
	Example:
	`SEND_COMMAND Panel,"'^PHN-TRANSFER, 1, 2125551000'"`

SIP Setup Commands

The following table lists and describes SIP setup commands. Using any of these commands causes the current user to go offline. SIP commands only apply to Modero X/S Series G4 panels equipped with SIP functionality (excluding all "No Comm" panels).

SIP Setup Commands	

^PHN-SETUP-DOMAIN	Sets the realm for authentication.
	Syntax:
	`"'^PHN-SETUP-DOMAIN,<domain>'"`
	Variable:
	domain = The realm used for authentication
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-DOMAIN,asterisk'"`

^PHN-SETUP-ENABLE	Registers a new user. Once the configuration has been updated, the ENABLE command should be run to re-register the new user. Syntax: `"'^PHN-SETUP-ENABLE'"`

SIP Setup Commands (Cont.)	

^PHN-SETUP-PASSWORD	Sets the user password for the proxy server.
	Syntax:
	`"'^PHN-SETUP-PASSWORD,<password>'"`
	Variable:
	password = The password for the user name
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-PASSWORD,6003'"`

^PHN-SETUP-PORT	Sets the port number for the proxy server.
	Syntax:
	`"'^PHN-SETUP-PORT,<port>'"`
	Variable:
	port = The port for the proxy server
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-PORT,5060'"`

^PHN-SETUP-PROXYADDR	Sets the IP address for the proxy server.
	Syntax:
	`"'^PHN-SETUP-PROXYADDR,<IP>'"`
	Variable:
	IP = The IP address for the proxy server
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-PROXYADDR,192.168.223.111'"`

^PHN-SETUP-STUNADDR	Sets the IP address for the STUN server.
	Syntax:
	`"'^PHN-SETUP-STUNADDR,<IP>'"`
	Variable:
	IP = The IP address for the STUN server
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-STUNADDR,192.168.223.111'"`

^PHN-SETUP-USERNAME	Sets the user name for authentication with the proxy server.
	Syntax:
	`"'^PHN-SETUP-USERNAME,<username>'"`
	Variable:
	username = The user name (usually the phone extension)
	Example:
	`SEND_COMMAND Panel,"'^PHN-SETUP-USERNAME,6003'"`

Audio Commands

The following is a list of commands that control audio resources. The "Bluetooth Headset" option used in several of these commands only applies to Modero X/S Series G4 panels equipped with Bluetooth functionality (excluding all "No Comm" panels):

Audio Commands	
^ADS	Selects the audio device to use. Syntax: `"'^ADS-<device>'"` Variables: Device: 1 = Built-in Speaker 2 = USB Headset 3 = Bluetooth Headset

?ADS	Queries the currently selected audio device (returned in custom event).
	Syntax:
	`"'?ADS'"`
	Queries the currently selected audio device (returned in custom event).
	`CUSTOM.TYPE = EVENTID = 1325`
	`CUSTOM.ID = ADDRESS = 0`
	`CUSTOM.FLAG = 0`
	`CUSTOM.VALUE1 = Device type (1=Built-in speaker, 2=USB Headset, 3=Bluetooth Headset)`
	`CUSTOM.VALUE2 = 0`
	`CUSTOM.VALUE3 = 0`
	`CUSTOM.TEXT = blank`

^ICM	Sets the microphone level during an intercom call. Used to set the microphone level during an intercom call (0 to 100).
	***Note**: Intercom commands only apply to Modero X/S Series G4 panels equipped with SIP functionality (excluding all "No Comm" panels).*
	Syntax:
	`"'^ICM-MICLEVEL,<level>,[device]'"`
	Set the state of the microphone on a panel to muted (1) or unmuted (0). At the start of each call the microphone starts out unmuted.
	`"'^ICM-SPEAKERLEVEL, <level>,[device]'"`
	Intercom modify command. Used to set the speaker level during an intercom call (0 to 100).

?MUT	Queries the panel mute status (returned in custom event).
	Syntax:
	`"'?MUT-[device]'"`
	Variables:
	Device:
	0 = Active device (default if none specified)
	1 = Built-in Speaker
	2 = USB Headset
	3 = Bluetooth Headset
	`CUSTOM.TYPE = EVENTID = 1305`
	`CUSTOM.ID = ADDRESS = 0`
	`CUSTOM.FLAG = 0`
	`CUSTOM.VALUE1 = 0 (unmuted)/1 (muted)`
	`CUSTOM.VALUE2 = 0`
	`CUSTOM.VALUE3 = 0`
	`CUSTOM.TEXT = blank`

Audio Commands (Cont.)	
^MUT	Sets the panel mute 0 or 1. Syntax: `"'^MUT-<status>,[device]'"` Variables: Status: 0 = unmuted, 1 = muted Device: 0 = Active device (mutes device if none specified) 1 = Built-in Speaker 2 = USB Headset 3 = Bluetooth Headset
?VOL	Queries the panel volume (returned in custom event). Syntax: `"'?VOL-[device]'"` Variables: Device: 0 = Active device (default if none specified) 1 = Built-in Speaker 2 = USB Headset 3 = Bluetooth Headset
^VOL	Sets the panel volume 0 to 100. 100 is max volume. Device is as follows: Syntax: `"'^VOL-<level>,[device]'"` Variables: Device: 0 = Active device (default if none specified) 1 = Built-in Speaker 2 = USB Headset 3 = Bluetooth Headset

The "Bluetooth Headset" option used in several of these commands only applies to Modero X/S Series G4 panels equipped with Bluetooth functionality (excluding all "No Comm" panels).

Panel-to-Panel Video Communication

All camera-enabled Modero G4 panels are AMX Videocom-enabled. Videocom is a new feature that is only supported on Modero G4 panels, where the output from the camera can be remotely viewed from any other Modero X Series panel. The camera output from one panel can be sent to one or many Modero G4 panels. Videocom is not compatible with SIP video phones.

Panel-to-Panel Video Communication commands only apply to Modero X/S Series G4 panels equipped with a camera (excluding Portrait wall panels and all "No Comm" panels).

The following is a list of commands that control panel-to-panel video communication:

Panel-to-Panel Video Communication Commands	
?CAM	Queries the panel for camera support and status. Returns a string: `CAM-<notsupported(0),supported(1)>,<disabled(0),enabled(1)>`

^VCE	Ends Videocom communication. Videocom (Panel to Panel Video Chat) End
	Stop sending H.264/RTP data.
	Examples:
	Flip to the videocom page w/ 2 video fill windows:
	// Window 1:5 is 160x120
	// Window 1:6 is 640x480
	`SEND_COMMAND 10001, 'PAGE-Videocom'`
	`SEND_COMMAND 10002, 'PAGE-Videocom'`
	Enable the local camera preview:
	`SEND_COMMAND 10001, '^SDM-5,0,cam://local'`
	`SEND_COMMAND 10002, '^SDM-5,0,cam://local'`
	Prepare for the remote feed:
	`SEND_COMMAND 10001, '^SDM-6,0,rtp://0.0.0.0:9000'`
	`SEND_COMMAND 10002, '^SDM-6,0,rtp://0.0.0.0:9000'`
	Set up intercom between the 2 panels:
	`SEND_COMMAND 10001, '^ICS-10.0.0.2,8000,8002,2'`
	`SEND_COMMAND 10002, '^ICS-10.0.0.1,8002,8000,2'`
	Actually start sending video traffic to each other:
	`SEND_COMMAND 10001, '^VCS-10.0.0.2:9000'`
	`SEND_COMMAND 10002, '^VCS-10.0.0.1:9000'`
	Actually start sending audio traffic to each other:
	`SEND_COMMAND 10001, '^ICM-talk'`
	`SEND_COMMAND 10002, '^ICM-talk'`
	Say goodbye, shutdown all inter-panel traffic:
	`SEND_COMMAND 10001, '^ICE'`
	`SEND_COMMAND 10001, '^VCE'`
	`SEND_COMMAND 10002, '^ICE'`
	`SEND_COMMAND 10002, '^VCE'`
	Broadcast to many panels from Panel 10001:
	`SEND_COMMAND 10001, 'PAGE-Videocom'`
	Enable the local camera preview
	`SEND_COMMAND 10001, '^SDM-5,0,cam://local'`
	Optionally prepare the local panel to see the remote feed:
	`SEND_COMMAND 10001, '^SDM-6,0,rtp://239.250.255.251:9000'`
	Add in all the participating panels
	`SEND_COMMAND xxxxx, '^SDM-6,0,rtp://239.250.255.251:9000'`
	Set up broadcast intercom w/ ICS, ICM if desired:
	// end call
	`SEND_COMMAND 10001, '^ICE'`
	`SEND_COMMAND 10001, '^VCE'`

Panel-to-Panel Video Communication Commands (Cont.)	
^VCS	Starts Videocom communication. Syntax: `"'^VCS-<dstIp>,<port>'"` Videocom (Panel to Panel Video Chat) Start Start sending h264/rtp data to dstIp:port.

Streaming Video, MXA-MP, and MXA-MPL Commands

The following are NetLinx commands that control streaming video output, as well as coordinate video output to a Modero X/S Series G4 touch panel from an MXA-MP Multi Preview or MXA-MPL Multi Preview Live video breakout box.

Streaming Video commands only apply to Modero X/S Series G4 panels equipped with a camera (excluding Portrait wall panels and all "No Comm" panels).

The command prefix for all MXA-MP/L commands is "**^SLT-1**" to match legacy Break Out Box video "slot" syntax. For Modero X/S Series G4 panels, Slot 1 (the only supported slot) always refers to the MXA-MP/L.

Streaming Video, MXA-MP/MPL Commands	

^DMM	Streaming audio/video mute.
	Syntax:
	`'"'^DMM-<audioMute>,<videoMute>,<url>'"`
	Variables:
	audioMute = mutes the audio for <url>
	0: Un-mute
	1: Mute
	url = a valid ^SDM url that is already in the playing state.
	Examples:
	`^DMM-1,0,udp://224.1.1.1:1234`
	Mute audio.
	`^DMM-0,0,udp://224.1.1.1:1234`
	Unmute audio.

^SDM	Starts or stops a streaming session. Stream starts if a valid URL is specified and stops if server URL string is empty (or invalid). If the streaming session is with the MXA-MPL, this command also starts/stops the encoding on the MXA-MPL (i.e. a separate ^SLT command is not necessary).
	URL must adhere to the syntax:
	- udp://<ip or hostname>:<portNumber> where IP could be 0.0.0.0 (unicast), or multicast address and port number. Port number must be an unused port from 1-65535
	- http://<ip or hostname>/url for motion jpeg
	- cam://local for activating the camera
	Examples:
	`SEND_COMMAND 10001:2:0, '^SDM-10,2,udp://234.4.0.4:5500' ;#`
	Sets ON state to play video on multicast address
	`SEND_COMMAND 10001:2:0, '^SDM-10,1,cam://local' ;#`
	Sets OFF state to play camera
	`SEND_COMMAND 10001:2:0, '^SDM-10,1,stop' ;#`
	Stop playing the current video
	`SEND_COMMAND 10001:2:0, '^SDM-10,1,' ;#`
	Stop playing the current video

Streaming Video, MXA-MP/MPL Commands (Cont.)	

^SLT	MXA-MP and MXA-MPL Command Set.
	Syntax:
	`"'^SLT-<device>,<subcommand>'"`
	Examples:
	`^SLT-1,reboot=<current(default),previous,factory>`
	Variables:
	Device = 1 (Device is always 1 for the MXA-MP and MXA-MPL, the only device type currently supported by Modero X Series panels)
	Subcommands:
	Reboot the MXA-MP/L. If "current" is used, or if no parameter is given, it is a simple reboot. Other parameters can tell the MP/L to change firmware loads as follows:
	current - simple reboot (default)
	previous - reboot and revert the MXA-MP/L the previously installed firmware
	factory - reboot and revert the MXA-MP/L to the factory installed version.
	`^SLT-1,reboot=<current(default),previous,factory>`
	MXA-MPL Audio/video enable command. Sets the option to enable video, or both audio and video on subsequent streams from the MXA-MPL.
	`^SLT-1,audiovideoenable=<video(default)|both>`
	Note: *this command will take effect on the next Stream start. It can still be overridden in the ^SLT-1,start command.*
	Set format, resolution and rate for MXA-MPL video, where:
	format = <hdmi|dvi>
	Resolution = <horizontal>x<vertical><i|p>@<rate>
	`^SLT-1,videomode=<format>,<resolution>`
	Turn on/off video input to the MXA-MPL.
	`^SLT-1,videoinput=<on|off>`
	Note: *It is highly recommended that the ^SDM commands be used to start and stop video from the MXA-MPL rather than the commands below. The SDM command will issue the start/stop to the MXA-MPL, as well as starting/stopping the decoding side on the panel. The "audiovideoenable" command above can be used to set the audio/video option that will be invoked in the processing of the ^SDM command.*
	MXA-MPL Start stream. Tells the MXA-MPL to start streaming video or both audio and video (default=video, or the mode set by the "audiovideoenable" subcommand above).
	`^SLT-1,start=<video,both>`
	MXA-MPL Stop stream. Tells the Breakout Box to stop streaming.
	`^SLT-1,stop`
	Query the value of any status field reported by the MXA-MP/L, such as version, serialNo, macAddress, inputInfo, streamInfo, type. Response is a custom event as follows:
	`CUSTOM.TYPE = EVENTID = 770`
	`CUSTOM.ID = ADDRESS = 0`
	`CUSTOM.FLAG = 0`
	`CUSTOM.VALUE1 = Message ID (echoed 'id' value from query)`
	`CUSTOM.VALUE2 = 0`
	`CUSTOM.VALUE3 = 0`
	`CUSTOM.TEXT = Value of the status field specified by 'statusField' in the query`
	`?SLT-1,querystatus=<statusField>,[id]`

While not necessary, creating video windows with width, height, and origin being multiples of 16 is a good practice. If the width and height are not multiples of 16, video could be cropped asymmetrically by the boundaries of the button.

The MXA-MPL only supports 2-channel stereo audio over HDMI.

Notes on Using the ^SDM and ^SLT Commands

Based on the user's pages, the touch panel receiving video from an MXA-MPL will initiate that video feed as necessary, based on the button receiving the video. However, if you are changing video resolution or mode, using the ^*SDM* or ^*SLT* commands may be necessary to start and stop the video. To do so:

1. Use the ^*SDM* command first, with an empty URL value to stop the video.
2. If this does not work, use ^*SDM* with the URL value of "169.254.11.12:5700".
3. If neither of these options, work, then and only then use ^*SLT* to start and stop the video.

In early firmware versions, ^*SLT-1,start* and ^*SLT-1,stop* were used to start and stop video coming from the MXA-MP. These commands are still available but using them is not recommended, as the stream is started and stopped automatically when a button that contains MXA-MPL video fill is displayed, and stopped when it is no longer in view. Showing/hiding the button state containing MXA-MPL video (e.g. via page flip, popup hide, or button state change) is the recommended way to start and stop MXA-MPL video. However, if it becomes necessary to stop video while the button is displayed on screen (for example, if resolution needs to be changed), then the ^*SDM* command should be used to start and stop the video.

If a button containing MXA-MPL video must be left on screen, try the following options:

```
SEND_COMMAND 10001:1:0,"'^SDM-10,1,'"
```

(stops MXA-MPL video)

```
SEND_COMMAND 10001:1:0,"'^SLT-1,videomode=hdmi,640x480p@30'"
```

(changes MXA-MPL video resolution to 640x480 with a frame rate of 30fps)

```
SEND_COMMAND 10001:1:0,"'^SDM-10,1,udp://169.254.11.12:5700'"
```

(restarts MXA-MPL streaming)

When using the MXA-MPL for displaying live motion streams, make sure to use the supported resolutions with the video input type. While the MXA-MPL is capable of supporting up to 60 Hz, the Modero X panels that use MXA-MPL only support 25-30 Hz.

Subpages Commands

The following are commands that control subpages:

Subpages Commands	

^EPR	Execute Push on Release - This sets the subpage viewer in a mode where a push will not be sent to the master until a touch release is received. Any movement of the finger during the screen press will cause neither the press nor the release to be sent.
	Syntax:
	`^EPR-<addressArray>,<state>`
	Variable:
	State 0 is off,
	State 1 is on.
	Example:
	`SEND_COMMAND 10001:1:0,'^EPR-401,1'`

^SCE	Configures subpage custom events. This command can be used to enable or disable the transmission of custom events to the master whenever certain operations occur. For example, the system programmer may want to be notified whenever a subpage enters the anchor position. The notification mechanism is a custom event. The ^SCE command takes the form of a vt addr range specifying one or more subpage viewer buttons followed by a comma separated list of custom event numbers. If the number is 0 or blank for a given event type then no custom event will be transmitted when that event occurs. If a number is specified, then it is used as the EVENTID value for the custom event. The range of 32001 to 65535 has been reserved in the panel for user custom event numbers. A different value could be used but might collide with other AMX event numbers. Event configuration is not permanent and all event numbers revert to the default of 0 when the panel restarts. Syntax: `"'^SCE-<vt addr range>,<optional anchor event num>,<optional onscreen event num>,<optional offscreen event num>,<optional reorder event num>'"`

Subpages Commands (Cont.)	

^SCE (Cont.)	The events are:
	Anchor - a new subpage has docked in the anchor position
	Onscreen - a docking operation has been completed and the subpages in the list are now onscreen. This list will include the anchor along with any subpages that may be partially onscreen.
	Offscreen - a docking operation has been completed and the subpages in the list are now offscreen.
	Reorder - the user has reordered the subpages in the set and the list contains all subpages in the new order without regard to onscreen or offscreen state.
	In response to any or all of the above events, the panel will create a string which is a list of subpage names separated by a pipe (|) character. The string for the anchor event is a single subpage name. If this string is too long to be transmitted in a single custom event, then multiple custom events will be created and transmitted.
	The format of the custom event transmitted to the master is as follows:
	CUSTOM.TYPE = EVENTID = the non-zero event number in the ^SCE command
	CUSTOM.ID = ADDRESS = the address of the viewer button which generated the event
	CUSTOM.FLAG = 0
	CUSTOM.VALUE1 = which one of possible multiple events this is (1 based)
	CUSTOM.VALUE2 = total number of events needed to send the entire string
	CUSTOM.VALUE3 = the total size of the original string in bytes
	CUSTOM.TEXT = pipe character separated list of subpage names
	As an example, if the subpage named TV_Favorite_SyFy enters the anchor position on a subpage viewer button with an address of 200, the following event would be transmitted to the master when the user had sent this command to the panel:
	`^SCE-200,32001,0,0,0`
	`CUSTOM.TYPE = EVENTID = 32001`
	`CUSTOM.ID = ADDRESS = 200`
	`CUSTOM.FLAG = 0`
	`CUSTOM.VALUE1 = 1`
	`CUSTOM.VALUE2 = 1`
	`CUSTOM.VALUE3 = 16`
	`CUSTOM.TEXT = TV_Favorite_SyFy`
	If defined, the events are sent in this order when a docking operation completes on a given viewer button: anchor, onscreen, offscreen.
	If reorder is defined and occurs, it is sent first: reorder, anchor, onscreen, offscreen

^SDR	Enabling subpage dynamic reordering. This command can be used to enable or disable dynamic reordering for a given viewer button or set of viewer buttons. It can also be used to set the amount of time to wait before initiating the single finger reorder time. Syntax: `"'^SDR-<vt addr range>,<enable state>,<optional hold time>'"` Variables: *enable state* - This value can be either "on" or "ON" or "1" to enable dynamic reordering for the specified viewer button(s). Any other value will disable dynamic reordering for the specified viewer button(s). *hold time* - This value is in tenths of a second. The value will be rounded up to the next highest quarter of a second. This is the amount of time that the user must press and hold a subpage with a single finger to trigger a dynamic reordering operation.
^SHD	Hides subpage. This command will hide named subpage and relocate the surrounding subpages as necessary to close the gap. If the subpage to be hidden is currently offscreen then it is removed without any other motion on the subpage viewer button. Parameter definitions are the same as for the subpage show command. Syntax: `"'^SHD-<vt addr range>,<name>,<optional time>'"`

Subpages Commands (Cont.)	
^SSH	Subpage show command. This command will perform one of three different operations based on the following conditions: 1. If the named subpage is hidden in the set associated with the viewer button it will be shown in the anchor position. 2. If the named subpage is not present in the set it will be added to the set and shown in the anchor position. 3. If the named subpage is already present in the set and is not hidden then the viewer button will move it to the anchor position. The anchor position is the location on the subpage viewer button specified by its weighting. This will either be left, center or right for horizontal subpage viewer buttons or top, center or bottom for vertical subpage viewer buttons. Surrounding subpages are relocated on the viewer button as needed to accommodate the described operations. Syntax: `"'^SSH-<vt addr range>,<name>,<optional position>,<optional time>'"` Variables: vt addr range – Specifies the address(es) of the subpage viewer button to be modified. name – Specifies the name of the subpage to be shown or added. position – Specifies where to add (or show) the named subpage in the set with 0 representing the beginning of the set. If this value is left out (or set to 65535) then the weighting value for the viewer button is used to place the new subpage, i.e. left/top, center or right/bottom. When using the weighting locations, set insertion positions can vary based on the current onscreen locations of existing subpages. time – Can range from 0 to 30 and represents tenths of a second. This is the amount of time used to move the subpages around when subpages are added or removed from a button.
^STG	Subpage toggle command. If the named subpage is hidden, then this command activates a subpage show command. If the named subpage is present, then a subpage hide command is activated. Parameter definitions are the same as for the subpage show command. Syntax: `"'^STG-<vt addr range>,<name>,<optional position>,<optional time>'"`

NOTE

The number of subpages that can be created is based on subpage size and limited only to the system's available memory.

NOTE

Using the same subpage set for multiple viewer buttons is not recommended. If you have multiple subpage viewer buttons in a project that need to display the same subpage list, using a unique set name for each is highly recommended. You can then use the same address for each viewer button so that any subpage commands (like ^SSH) will apply to each set.

NOTE

For more information on subpages and their use, please refer to the TPDesign4 online Help and the TPDesign4 Operation Reference Guide, available at ***www.amx.com****.*

LED Commands

For Modero X/S Series G4 touch panels with LED displays, the following command controls the LED behavior and output:

LED Commands	
^WLD	Controls the LED behavior. Syntax: `^WLD-<LED Num>,<Action>` Variables: <LED Num> indicates the channel code or ID number (0-RED, 2-GREEN) <Action> indicates the expected behavior of the LED: 0-LED OFF - Turns LED Off 1-LED ON - Turns LED On ***Note:*** *Setting a particular LED color is not mutually exclusive. Both GREEN and RED may be on at the same time.*

Custom Events

Bluetooth Headsets

The following are custom events for Bluetooth handset functionality:

Custom Events for Bluetooth Handsets	

AMX Bluetooth Handset Custom Event	Sent to indicate pushes/events on the AMX Bluetooth Headset (MXA-HST).
	`CUSTOM.TYPE = EVENTID = 790`
	`CUSTOM.ID = ADDRESS = 0`
	`CUSTOM.FLAG = Accept(1), Reject/Hangup(2), Redial(4)`
	`CUSTOM.VALUE1 = 0`
	`CUSTOM.VALUE2 = 0`
	`CUSTOM.VALUE3 = 0`
	`CUSTOM.TEXT = blank`
	Note*: AMX Bluetooth Handset Custom Events only apply to Modero X/S Series G4 panels equipped with Bluetooth functionality (excluding all "No Comm" panels).*

Dynamic Images

Custom Events for Dynamic Images	

Resource Load Notification custom event	Received when a resource for which notification is enabled is loaded.
	`CUSTOM.TYPE = EVENTID = 1400`
	`CUSTOM.ID = 0`
	`CUSTOM.FLAG = 0`
	`CUSTOM.VALUE1 = 0`
	`CUSTOM.VALUE2 = 0`
	`CUSTOM.VALUE3 = 0`
	`CUSTOM.TEXT = String containing the resource name`
	Example:
	`BUTTON_EVENT[Panel,1]`
	`{`
	`  PUSH:`
	`  {`
	`  SEND_COMMAND Panel, '^RFRP-Sports_Image,once';`
	`  // refresh the resource name 'Sports_Image'`
	`  }`
	`}`
	`CUSTOM_EVENT[Panel,0,1400]`
	`{`
	`  SEND_STRING 0,"'*** Dynamic Image loaded. Resource=',CUSTOM.TEXT,' ***'"`
	`  // resulting string for Sports_Image would be '*** Dynamic Image loaded. Resource=Sports_Image ***'`
	`}`

Popups

Custom Events for Popups	

^PUN	Notifies when a popup custom event has been sent to the Master. When a popup is attached, detached, or moved on a page, a custom event is sent to the master from port 1 of the device to indicate the popup's location.
	On a move, the custom event is sent when the move is complete but not when the moves starts or is in progress. Notifications happen via a custom event (1323) sent to the master.
	The same event type (132) is used for ?PUL responses.
	Syntax:
	`'^PUN-<enable>'`
	Variable:
	enable: 0 = disable, 1 = user pages only, and 2 = all pages (user + system)
	Custom Event fields:
	`ID = 0`
	`Type = 1323`
	`Flag = operation (0=location query, 10=attach, 20=drag, 30=detach)`
	`Value1 = x coordinate of popup`
	`Value2 = y coordinate of popup`
	`Value3 = 0`
	`Text = popup name`
	`Text = popup name`

?PUL	Queries the location of a popup on the current page. Notifications happen via a custom event (1323) sent to the master from port 1 of the device.
	The same event type (1323) is used for ^PUN notifications.
	If the popup name is invalid, no custom event is sent to the master.
	Syntax:
	`'?PUL-<popup name>'`
	Variable:
	Popup name: The name of the popup whose location is being queried.
	Custom Event fields:
	`ID = 0`
	`Type = 1323`
	`Flag = operation (0=location query)`
	`Value1 = x coordinate of popup (always 0 is not attached to current page)`
	`Value2 = y coordinate of popup (always 0 is not attached to current page)`
	`Value3 = 1 if popup is attached to current page, 0 of not attached to current page`
	`Text = popup name`

?PUS	Queries the size of a popup on the current page. Notifications happen via a custom event (1324) sent to the master from port 1 of the device.
	If the popup name is invalid, no custom event is sent to the master.
	Syntax:
	`'?PUS-<popup name>'`
	Variable:
	Popup name: The name of the popup whose size is trying to be queried.
	Custom Event fields:
	`ID = 0`
	`Type = 1324`
	`Flag = 0`
	`Value1 = width of popup`
	`Value2 = height of popup`
	`Value3 = 1 if popup is attached to current page, 0 of not attached to current page`
	`Text = popup name`

Smart Cards

Custom Events for Smart Cards	

Smart Card Insert/Remove	This event indicates when a smart card was removed or inserted.
	Custom.Text can be a large string, so it will be sent in 1024 chunks.
	Value1 and Value2 indicate chunk count and total number of chunks.
	`"Custom.Type = 710`
	`"Custom.ID = 0`
	`"Custom.Flag =`
	`0: Remove Card Event`
	`1: Insert Card Event`
	`"Custom.Value1 = Chunk counter of Custom.Text`
	`"Custom.Value2 = Total number of chunks for Custom.Text`
	`"Custom.Value3 = String length of Custom.Text`
	`"Custom.Text = String representing the CHUID of the card (only used for 'insert' event)`

Smart Card Reader Insert/ Remove	This event indicates when a smart card reader was removed or inserted.
	Custom.Text can be a large string, so it will be sent in 1024 chunks.
	Value1 and Value2 indicate chunk count and total number of chunks.
	`"Custom.Type = 711`
	`"Custom.ID = 0`
	`"Custom.Flag =`
	`0: Remove Reader Event`
	`1: Insert Reader Event`
	`"Custom.Value1 = Chunk counter of Custom.Text`
	`"Custom.Value2 = Total number of chunks for Custom.Text`
	`"Custom.Value3 = String length of Custom.Text`
	`"Custom.Text = String representing the readers name (only used for 'insert' event)`

Streaming Video

Custom Events for Streaming Video	

Streaming video custom event	Indicates streaming video status changes.
	Start and stop stream based events are sent to the master in the form of custom events.
	The eventID 768 is sent to port 1 on the master. The fields are:
	`CUSTOM.TYPE = EVENTID = 768`
	`CUSTOM.ID = ADDRESS = 0`
	`CUSTOM.FLAG = Start(1), Stop(2), Error(8)`
	`CUSTOM.VALUE1 = Number of starts (or stops or errors)`
	`CUSTOM.VALUE2 = Address of button/stream`
	`CUSTOM.VALUE3 = Port of button/stream`
	`CUSTOM.TEXT = stream URL`

NFC Commands

Custom Events for NFC	

NFC Read tag custom event	Reported to the master when the panel reads an NFC Tag.
	`Custom event type - 700`
	`ID - 1`
	`Flag - 0`
	`Value1 - Tag Type`
	`Value2 - Data Type`
	`Value3 - Length of data in the Text field`
	`Text - NFC Data (of type specified by Value2)`
	Where Tag Type is:
	1 = ISO 15693
	2 = ISO 14443A
	3 = ISO 14443B
	4 = FeliCa (currently not supported)
	Data Type is:
	0 = custom.text field contains the NFC UID (as a text string)
	1 = custom.text contains NFC data (currently not supported)
	***Note**: Custom Events for NFC only apply to Modero X/S Series G4 panels equipped with NFC functionality (excluding all "No Comm" panels).*

Appendix A: Text Formatting

Text Formatting Codes for Bargraphs/Joysticks

Text formatting codes for bargraphs provide a mechanism to allow a portion of a bargraphs text to be dynamically provided information about the current status of the level (multistate and traditional). These codes are entered into the text field along with any other text.

The following is a code list used for bargraphs:

Bargraph Text Code Inputs		
Code	**Bargraph**	**Multi-State Bargraph**
$P	Display the current percentage of the bargraph (derived from the Adjusted Level Value as it falls between the Range Values)	Display the current percentage of the bargraph (derived from the Adjusted Level Value as it falls between the Range Values)
$V	Raw Level Value	Raw Level Value
$L	Range Low Value	Range Low Value
$H	Range High Value	Range High Value
$S	N/A	Current State
$A	Adjusted Level Value (Range Low Value subtracted from the Raw Level Value)	Adjusted Level Value (Range Low Value subtracted from the Raw Level Value)
$R	Low Range subtracted from the High Range	Low Range subtracted from the High Range
$$	Dollar sign	Dollar sign

By changing the text on a button (via a VT command), you can modify the codes on a button. When one of the Text Formatting Codes is encountered by the firmware, it is replaced with the correct value. These values are derived from the following operations:

Formatting Code Operations	
Code	**Operation**
$P	(Current Value - Range Low Value / Range High Value - Range Low Value) x 100
$V	Current Level Value
$L	Range Low Value
$H	Range High Value
$S	Current State (if regular bargraph then resolves to nothing)
$A	Current Value - Range Low Value
$R	Range High Value - Range Low Value

Given a current raw level value of 532, a range low value of 500, and a high range value of 600, the following text formatting codes would yield the following strings as shown in the table below:

Example	
Format	**Display**
$P%	32%
$A out of $R	32 out of 100
$A of 0 - $R	32 of 0 - 100
$V of $L - $H	532 of 500 - 600

Text Area Input Masking

Text Area Input Masking may be used to limit the allowed/correct characters that are entered into a text area. For example, in working with a zip code, a user could limit the entry to a max length of only 5 characters; with input masking, this limit could be changed to 5 mandatory numerical digits and 4 optional numerical digits. A possible use for this feature is to enter information into form fields. The purpose of this feature is to:

- Force the use of correct type of characters (i.e. numbers vs. characters)
- Limit the number of characters in a text area
- Suggest proper format with fixed characters
- Right to Left
- Required or Optional
- Change/Force a Case
- Create multiple logical fields
- Specify range of characters/number for each field

With this feature, it is not necessary to:

- Limit the user to a choice of selections
- Handle complex input tasks such as names, days of the week, or month by name
- Perform complex validation such as Subnet Mask validation

Input mask character types

These character types define what information is allowed to be entered in any specific instance. The following table lists what characters in an input mask will define what characters are allowed in any given position.

Character Types	
Character	**Masking Rule**
0	Digit (0 to 9, entry required, plus [+] and minus [-] signs not allowed)
9	Digit or space (entry not required, plus and minus signs not allowed)
#	Digit or space (entry not required; plus and minus signs allowed)
L	Letter (A to Z, entry required)
?	Letter (A to Z, entry optional)
A	Letter or digit (entry required)
a	Letter or digit (entry optional)
&	Any character or a space (entry required)
C	Any character or a space (entry optional)

The number of the above characters used determines the length of the input masking box. Example: 0000 requires an entry, requires digits to be used, and allows only 4 characters to be entered/used.

Refer to the following SEND_COMMANDs for more detailed information:

- `^BIM` - Sets the input mask for the specified addresses.
- `^BMF` subcommand **`%MK`** - sets the input mask of a text area

Input Mask Ranges

These ranges allow a user to specify the minimum and maximum numeric value for a field. ***Only one range is allowed per field. Using a range implies a numeric entry ONLY.***

Input Mask Ranges	
Character	**Meaning**
[	Start range
]	End range
|	Range Separator

An example from the above table:

[0|255] This allows a user to enter a value from 0 to 255.

Input mask next field characters

These characters allow you to specify a list of characters that cause the keyboard to move the focus to the next field when pressed, instead of inserting the text into the text area.

Input Mask Next Field Char	
Character	**Meaning**
{	Start Next Field List
}	End Next Field List

An example from the above table:

{.} or {:} or {.:} Proceed to the next text area input box after a user hits any of these keys.

Input mask operations

Input Mask Operators change the behavior of the field in the following way:

Input Mask Operators	
Character	**Meaning**
<	Forces all characters to be converted to lowercase
>	Forces all characters to be converted to uppercase
^	Sets the overflow flag for this field

Input mask literals

To define a literal character, enter any character, other than those shown in the above table *(including spaces, and symbols)*. A back-slash ('\') causes the character that follows it to be displayed as the literal character. For example, **\A** is displayed just as the letter **A**. To define one of the following characters as a literal character, precede that character with a back-slash. Text entry operation using Input Masks.

A keyboard entry using normal text entry is straightforward. However, once an input mask is applied, the behavior of the keyboard needs to change to accommodate the input mask's requirement. When working with masks, any literal characters in the mask will be "skipped" by any cursor movement, including cursor, backspace, and delete keys.

When operating with a mask, the mask should be displayed with placeholders. The "-" character should display where you should enter a character. The arrow keys will move between the "-" characters and allow you to replace them. The text entry code operates as if it is in the overwrite mode. If the cursor is positioned on a character already entered and you type in a new (and valid) character, the new character replaces the old character. There is no shifting of characters.

When working with ranges specified by the [] mask, the keyboard allows you to enter a number between the values listed in the ranges. If a user enters a value that is larger than the maximum, the maximum number of right-most characters is used to create a new, acceptable value.

- **Example 1**: If you type "125" into a field accepting 0-100, then the values displayed will be "1", "12", "25".
- **Example 2**: If the max for the field was 20, then the values displayed will be "1", "12", "5".

When data overflows from a numerical field, the overflow value is added to the previous field on the chain if the overflow character was specified. In the above example, if the overflow flag was set, the first example will place the "1" into the previous logical field and the second example will place "12" in the previous logical field.

If the overflow field already contains a value, the new value will be inserted to the right of the current characters and the overflow field will be evaluated. Overflow continues to work until a field with no overflow value is set or no more fields remain (i.e. reached first field).

If a character is typed and that character appears in the Next Field list, the keyboard should move the focus to the next field. For example, when entering time, a **":"** is used as a next field character. If you enter "1:2", the 1 is entered in the current field (hours) and then the focus is moved to the next field and 2 is entered in that field.

When entering time in a 12-hour format, entry of AM and PM is required. Instead of adding AM/PM to the input mask specification, the AM/PM should be handled within the NetLinx code. This allows a programmer to show/hide and provide discrete feedback for AM and PM.

Input mask output examples

The following are some common input masking examples:

Output Examples		
Common Name	**Input Mask**	**Input**
IP Address Quad	[0|255]{.}	Any value from 0 to 255
Hour	[1|12]{:}	Any value from 1 to 12
Minute/Second	[0|59]{:}	Any value from 0 to 59
Frames	[0|29]{:}	Any value from 0 to 29
Phone Numbers	(999) 000-0000	(555) 555-5555
Zip Code	00000-9999	75082-4567

URL Resources

A URL can be broken into several parts. For example, with the URL *http://www.amx.com/company-info-home.asp*, this URL indicates that the protocol in use is **http** (HyperText Transport Protocol) and that the information resides on a host machine named **www.amx.com**. The image on that host machine is given an assignment (*by the program*) name of **company-info-home.asp** *(Active Server Page)*.

The exact meaning of this name on the host machine is both protocol dependent and host dependent. The information normally resides in a file, but it could be generated dynamically. This component of the URL is called the file component, even though the information is not necessarily in a file.

A URL can optionally specify a port, which is the port number to which the TCP/IP connection is made on the remote host machine. If the port is not specified, the default port for the protocol is used instead. For example, the default port for http is *80*. An alternative port could be specified as: *http://www.amx.com:8080/company-info-home.asp*.

Any legal HTTP syntax can be used.

Special Escape Sequences

The system has only a limited knowledge of URL formats, as it transparently passes the URL information onto the server for translation. A user can then pass any parameters to the server side programs such as CGI scripts or active server pages. However; the system will parse the URL looking for special escape codes. When it finds an escape code, it replaces that code with a particular piece of panel, button, or state information.

For example,

"http://www.amx.com/img.asp?device=$DV"

would become

http://www.amx.com/img.asp?device=10001.

Other used escape sequences include:

Escape Sequences	
Sequence	**Panel Information**
$DV	Device Number
$SY	System Number
$IP	IP Address
$HN	Host Name
$MC	Mac Address
$ID	Neuron ID
$PX	X Resolution of current panel mode/file
$PY	Y Resolution of current panel mode/file
$BX	X Resolution of current button
$BY	Y Resolution of current button
$BN	Name of button
$ST	Current state
$AC	Address Code
$AP	Address Port
$CC	Channel Code
$CP	Channel Port
$LC	Level Code
$LP	Level Port

Appendix B: Video Streaming Troubleshooting

Optimizing Motion JPEG Video Presentation and Speed

In some cases, multiple Motion JPEG streams may slow presentation of individual screen popups, or prevent all of the streams from showing at the same time. This may happen even though the Panel Preview in TPDesign4 may show no issues. To minimize this and assure a smooth and non-sluggish stream, try these options:

- Limit the number of simultaneous Motion JPEG streams to eight or fewer streams at a time.
- Remove any unnecessary buttons associated with the Motion JPEG streams.
- Make sure that the Refresh rate on a Motion JPEG is set to 0.
- Make sure to define special preview resources in the Resource Manager, preferably at a lower resolution, and ***without*** the "Dynamo" checkbox checked. If only one resource can be accelerated, and if preview buttons are not defined, a different resource could be accessed each time the page is viewed.
- Make sure that the full images have the "Dynamo" checkbox checked, with a Refresh rate of 0.
- Make sure to hide the preview popup before displaying the full image.
- If possible, uncheck the "Scale to Fit" option, as scaling is very resource-intensive.
- Dial down the frame rate of the server. The frame rate of a Motion JPEG is determined by the server.
- When you go from a page with multiple previews to a page with a single full screen video, it is best to do a page flip rather than popup attach, ***or*** hide the preview windows first. Otherwise, the preview windows will continue to decode (taxing the system), even though they may be completely or partially obstructed by the popup.
- Verify that the full-screen image is set for acceleration by checking the "Dynamo" box in Resource Manager.

Motion JPEG Support for Modero X Series Panels	
Baseline mode:	ISO 10918-1
Encoding:	ISO-10918-5 (JFIF)
Maximum Resolution:	720p (hardware acceleration only; define as video fill, not Resource Manager)
Recommended resolution:	720x480-NTSC or 720x576-PAL (or less). If the video is defined in the Resource Manager as opposed to video fill, consideration must be made for the video being decoded by the Modero X Series panel, which cannot decode 720p.
Maximum Frame Rate:	Up to 30fps
Latency:	From 1-3 seconds, depending on multiple factors including button size, resolution and network performance.

Transcoding Guidelines

For certain H.264 video and audio streaming , you may observe a drift between audio and video the longer the content is streamed. This drift can be more pronounced when streaming from a non- MXA-MPL source such as a Vision 2 steaming server. If the panel detects excessive drift, it will attempt to restart the stream decode. During the restart, the audio will be temporarily interrupted and the video will be frozen on the last frame until the restart is complete (typically a couple of seconds).

To reduce the drift issue for Vision 2 H264 steaming, video transcoding tools (such as HandBrake or FFMPEG) are available to convert H.264 video into lower bitrates, reduced resolution and/or lower H.264 profiles. For example you can try the H.264, 2mbps bit rate, 480p resolution, Baseline profile. If this does not work, try transcoding the stream into MPEG2 video, which is less susceptible to A/V drift.

*Third-party encoders and digital television devices have not been tested with Modero X Series touch panels, and are **not** supported by AMX.*

The table below lists the typical synchronization and latency times for each supported video and audio stream:

Video Performance					
Device	**Typical A/V Sync (offset/ hr)**	**Typical A/V Sync Restart Rate**	**Expected Latency - Typical**	**Expected Latency - Max**	**Notes:**
MXA-MPL					
H.264	<100ms	~ every 3hrs	750ms (Video) 1s (Audio + Video	2s or more, depending on network	Recommend maintaining aspect ratio of source and following usage guidelines regarding window/button placement. Network congestion can cause video glitches. AMX recommends the Multi-Preview Live and Modero X touch panel be installed behind a smart Ethernet switch to filter multicast packets reaching the panel and consuming panel resources. The MXA-UENET video accelerator cable (**FG5968-74/75/76**) may also improve performance in cases of network congestion.
MPEG2	N/A	N/A	N/A	N/A	N/A
H.264	<100ms	~ every 1-2hrs	1.5s	3s or more, depending on network	The MXA-UENET video accelerator cable (**FG5968-74/75/76**) is strongly recommended for this application. Network congestion can cause video glitches. AMX recommends the Modero X touch panel be installed behind a smart Ethernet switch to filter unintended multicast packets reaching the panel and consuming panel resources. Recommend maintaining aspect ratio of source and following usage guidelines regarding window/button placement. • AAC <= 192Kbps @ 48KHz • H.264 video 720p max (D1 for best results), < 30fps max and a 4Mbps bitrate • UDP Transport protocol only (RTP not supported) • Multicast and/or unicast addresses • SAP disabled May require transcoding to H.264 baseline profile and reducing resolution/ frame rate/bit rate per recommendations above. Recommend transcoding source material to MPEG2 if Audio/Video sync issues still occur after following above guidelines.

Video Performance (Cont.)					
Device	**Typical A/V Sync (offset/ hr)**	**Typical A/V Sync Restart Rate**	**Expected Latency - Typical**	**Expected Latency - Max**	**Notes:**
Vision2 (Cont.)					
MPEG2	<100ms	~ every 1-2hrs	1.5s	3s or more, depending on network	The MXA-UENET video accelerator cable (**FG5968-74/75/76**) is recommended for this application, especially HD streams. Network congestion can cause video glitches. We recommend the panel be installed behind a smart Ethernet switch to filter unintended multicast packets reaching the panel and consuming panel resources. Recommend maintaining aspect ratio of source and following usage guidelines regarding window/button placement. Best results are obtained with standard definition (NTSC or PAL) sources. Minor audio/video irregularities may be noticed depending on network performance, video source content, and window size. Note: Video frame rate can be affected by network performance. MPEG-2 video streaming Settings: • MP2/MP3 audio <= 192Kbps @ 48KHz • MPEG2 video 720p max < 30fps max bitrate of 8Mbps • UDP Transport protocol only (RTP not supported) • Multicast and/or unicast addresses • SAP disabled
MAX-CSE					
H.264	N/A	N/A	N/A	N/A	N/A
MPEG2	<100ms	~ every 1-2hrs	1.5s	3s or more, depending on network	Network congestion can cause video glitches. We recommend the panel be installed behind a smart Ethernet switch to filter unintended multicast packets reaching the panel and consuming panel resources. Recommend maintaining aspect ratio of source and following usage guidelines regarding window/button placement Minor audio/video irregularities may be noticed depending on network performance, video source content, and window size. Note: Video frame rate can be affected by network performance. MPEG-2 video streaming Settings: • High quality preset profile (6Mbps/ MPEG2 CBR D1 Resolution) • MP2/MP3 audio < 192Kbps @ 48KHz • UDP Transport protocol only (RTP not supported) • Multicast and/or unicast addresses • SAP disabled

Video Performance (Cont.)					
Device	**Typical A/V Sync (offset/ hr)**	**Typical A/V Sync Restart Rate**	**Expected Latency - Typical**	**Expected Latency - Max**	**Notes:**
3rd Party Solutions					
H.264	N/A	N/A	N/A	N/A	***Note:*** *Third-party encoders and digital television devices have not been tested with Modero X Series touch panels, and are not supported by AMX.* The MXA-UENET video accelerator cable (**FG5968-74/75/76**) is recommended for this application, especially HD streams. Network congestion can cause video glitches. We recommend the panel be installed behind a smart Ethernet switch to filter unintended multicast packets reaching the panel and consuming panel resources. We recommend maintaining aspect ratio of source and following usage guidelines regarding window/button placement.
MPEG2	N/A	N/A	N/A	N/A	***Note:*** *Third-party encoders and digital television devices have not been tested with Modero X Series touch panels, and are not supported by AMX.* The MXA-UENET video accelerator cable (**FG5968-74/75/76**) is recommended for this application, especially HD streams. Network congestion can cause video glitches. We recommend the panel be installed behind a smart Ethernet switch to filter unintended multicast packets reaching the panel and consuming panel resources. We recommend maintaining aspect ratio of source and following usage guidelines regarding window/button placement.

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